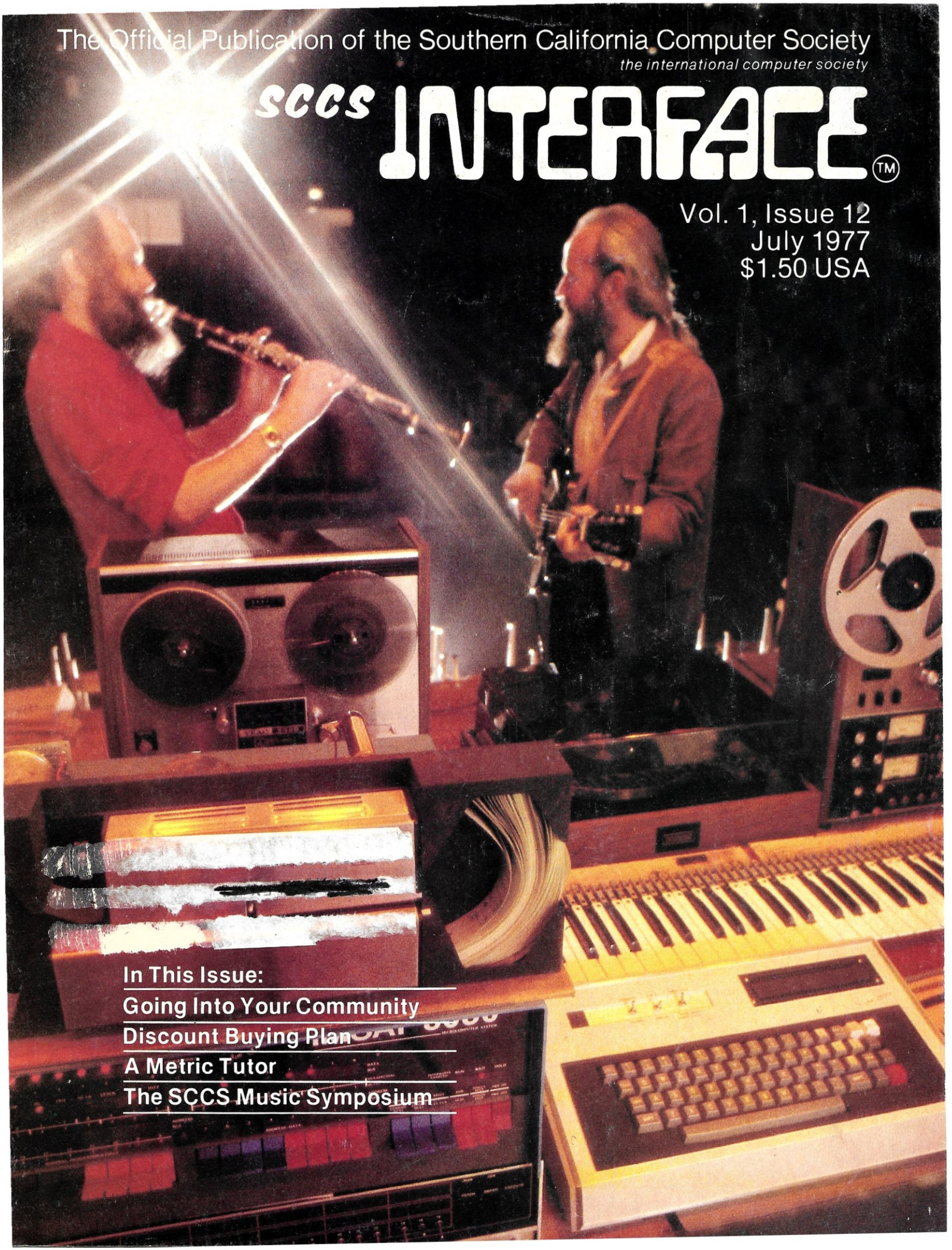
The Official Publication of the Southern California Computer Society
the international computer society

SCCS INTERFACE™

Vol. 1, Issue 12
July 1977
$1.50 USA



In This Issue:

Going Into Your Community
Discount Buying Plan
A Metric Tutor
The SCCS Music Symposium

SOLUTIONS FOR SALE:
OUR KITS SOLVE YOUR PROBLEMS.

PROBLEM: As you add more cards on to your buss, funny things start to happen . . . data scrambles, bits drop, and programs crash for mysterious reasons.

SOLUTION: ACTIVE TERMINATOR BOARD ($29.50)

Plug into any S-100 slot to tighten up your machine by providing *proper* loading for TTL lines. Active terminations draw far less power than passive types, and provide superior data handling compared to unterminated lines.

PROBLEM: You have outgrown your CPU board, and are getting tired of talking to your 8080 in machine language.

SOLUTION: 4K ECONOROM II™ SOFTWARE BOARD ($265)

Our latest model offers improved listings that make this board even more flexible . . . contains editor, assembler, and monitor routines for your 8080, implemented in eraseable ROM. Very low power operations, S-100 compatible. Also available unprogrammed for storing custom programs and routines.

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SOLUTION: 8K ECONORAM II™ ($169)

Everything you want, from low power, to speed (zips along at 450 ns), to reliable technology (static RAMs with low power Schottky support), to convenience features (dip switch block selectors, ability to configure as 2 separate 4K blocks, and tri-state outputs that mate with the S-100 buss *or* bi-directional busses). In our years of experience selling RAM cards, we've learned how to do it right . . . and how to do it inexpensively.

PROBLEM: You need a simple, compact, regulated supply that won't blow up your computer if something goes wrong.

SOLUTION: SMALL SYSTEM POWER SUPPLY ($45)

Delivers 5V at 4A with *crowbar* overvoltage protection, and ± 12V at ½A per side. Also features an adjustable bias supply and compact design.

PROBLEM: You want to add more peripheral cards to an already overpopulated machine . . . or start a stand alone system.

SOLUTION: 10 SLOT MOTHERBOARD ($89) or 18 SLOT MOTHERBOARD ($124)

Not just another S-100 motherboard—includes all edge connectors, as well as our active termination circuitry and extra-wide supply line traces (go ahead . . . fill all the slots, you won't get additional problems with additional cards). Starting a system? Start here.

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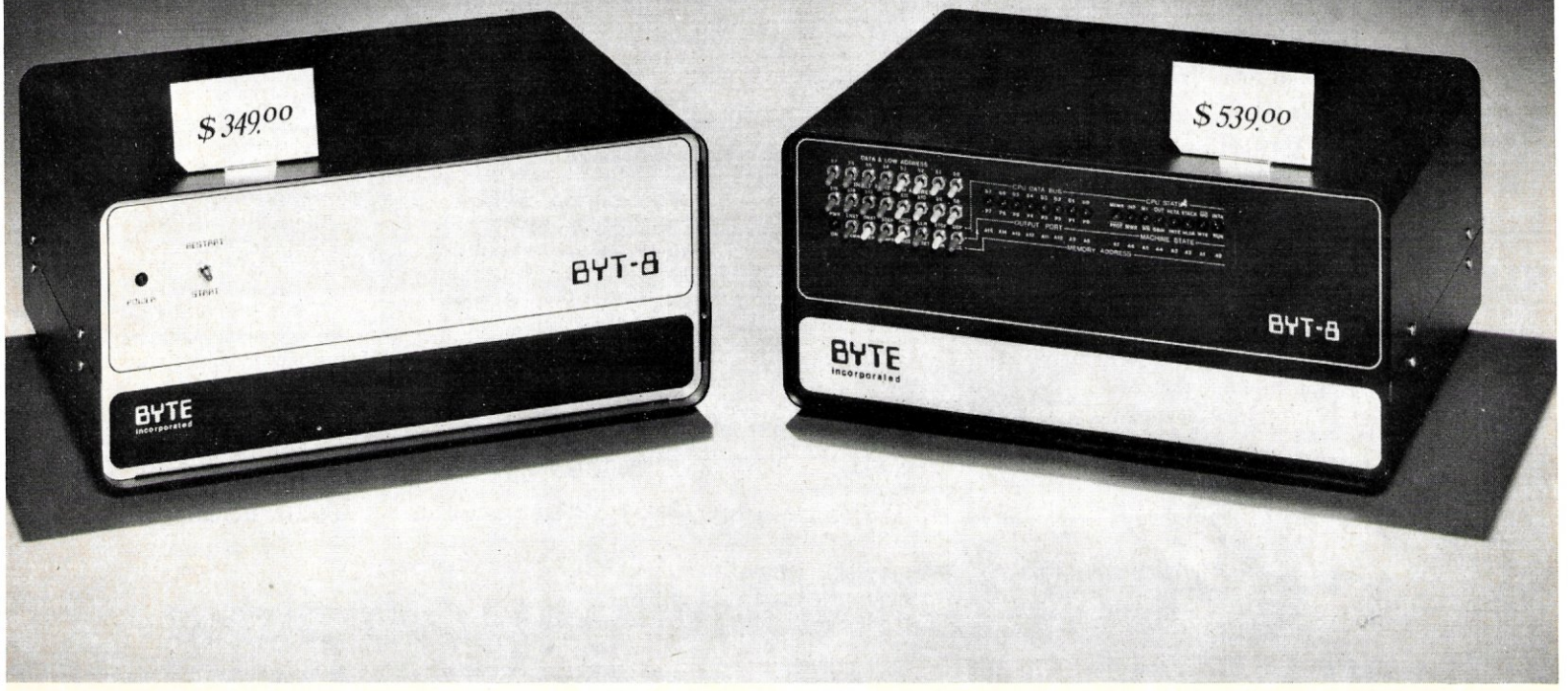
Circle No. 50 on Inquiry Card

The Byte Shop reaches a new low in microcomputers.



The Byt-8. It doesn't have a nifty (and expensive) front panel with lots of LED's and toggle switches.

And we obviously don't have a big full-color ad.

What we do have is the lowest priced microcomputer you can buy—built around the powerful and popular 8080A microprocessor.

For $349, you get the complete microcomputer card, motherboard, power supply and chassis in kit form.

The Byt-8 S100 bus is the same one used by Altair, IMSAI and most others so you have the greatest possible flexibility in choosing memory and input/output cards.

Optional cards from the Byte Shop include 4k, 8k or 16k of Random Access Memory, 4k or 8k of Programmable Read-Only Memory, a multiple input/output card, a TV typewriter card and, yes, a front panel bootstrap card, if you want the LED's and switches.

Even the CPU is optional. We'll sell you the chassis, motherboard and power supply for $229, and you can choose your own microcomputer card—a ZPU for instance?

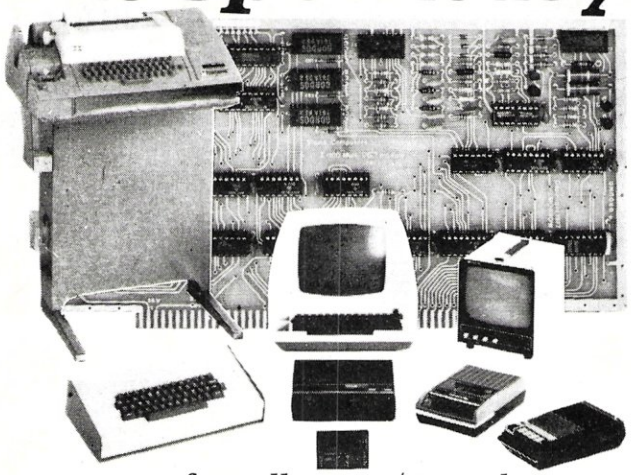
Byt-8. It's the new low in price, but we're aiming for a new high in flexibility, delivery and support. See the Byt-8 at your nearest Byte Shop.

BYTE SHOP™
the affordable computer store

Stores now open in **Arizona,** Phoenix, Tempe, Tucson; **California,** Berkeley, Burbank, Campbell, Diablo Valley, Fresno, Hayward, Lawndale, Long Beach, Mountain View, Palo Alto, Pasadena, Placentia, Sacramento, San Diego, San Fernando Valley, San Francisco, Santa Barbara, Stockton, Tarzana, Thousand Oaks, Ventura, Westminster; **Colorado,** Arapahoe County, Boulder, Englewood; **Florida,** Cocoa Beach, Miami; **Indiana,** Indianapolis; **Minnesota,** Eagan; **New York,** Levittown; **Ohio,** Rocky River; **Oregon,** Beaverton, Portland; **Pennsylvania,** Bryn Mawr; **South Carolina,** Columbia; **Utah,** Salt Lake City; **Washington,** Bellvue; **Canada,** Vancouver, Winnipeg; **Japan,** Tokyo. If there's no Byte Shop near you yet, please write or call Byte Inc., 1261 Birchwood Drive, Sunnyvale, California 94088 • (408) 734-9000 for more information on our Byt-8 system.

Circle No. 54 on Inquiry Card

The Speakeasy™



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Talk about easy interfacing for your Altair, IMSAI or Equinox 100! Plug in **The Speakeasy**™ interface board and you've got 3 cassette I/O channels with individual motion control . . . a bi-directional parallel port for keyboard, paper tape reader or printer . . . a serial port for teletype/RS232 . . . and RAM/ROM software to drive it all. $120 kit by Morrow's Micro-Stuff ($4 handling; Cal. Res. add tax. Write for specs.

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The WünderBuss™

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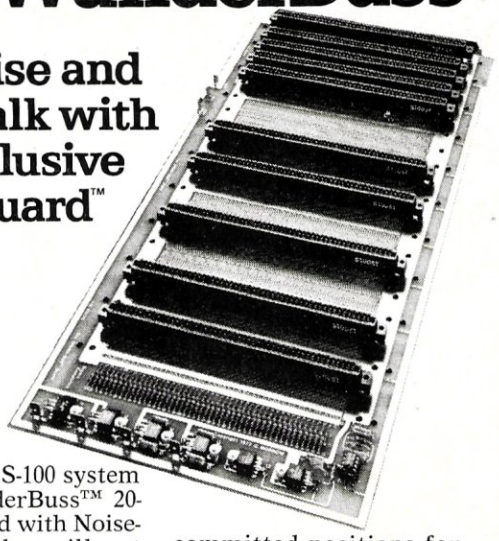

Build your S-100 system on the WünderBuss™ 20-slot bus-board with Noiseguard™ and you'll get "textbook clean" signals.

The Noiseguard™ system's interlaced ground system shields all bus lines from cross-talk . . . and low-power active termination absorbs noise and signal reflections.

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The incomparable WünderBuss™, by Morrow's Micro-Stuff, is now available for $76 alone. With 10 edge connectors, $120. With 20 edge connectors $154. Add $4 handling.

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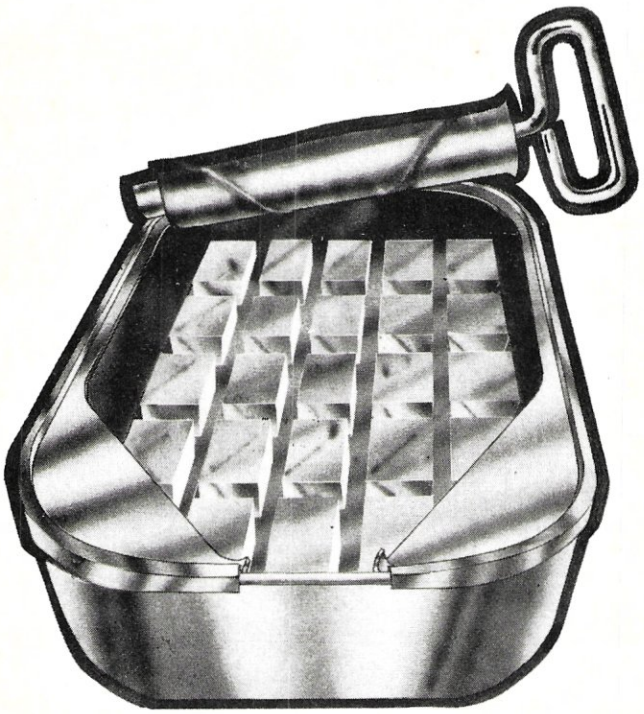
K-rations for your computer



K-Ration™ 8Kx8 memory with SynchroFresh™. $188 assembled and warranted.

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sccs INTERFACE™

THE OFFICIAL PUBLICATION OF THE SOUTHERN CALIFORNIA COMPUTER SOCIETY
the international computer society

VOL. 1, ISSUE 12 **JULY 1977**

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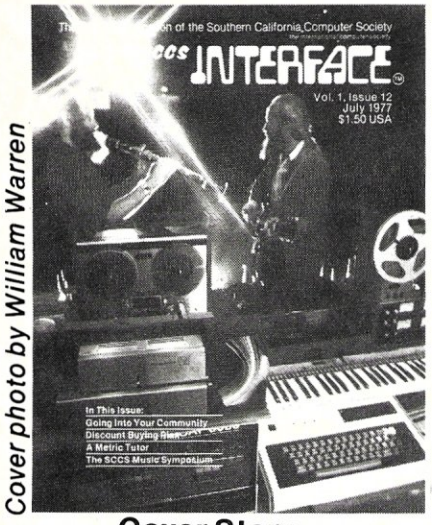

Cover photo by William Warren

Cover Story

Jim Gordon on clarinet and John Lyon on guitar, jamming with Jim's IMSAI controlled percussion synthesizer at the SCCS Music Symposium. Story on page 18.

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Society News

Dues Increase

The board of directors voted to increase the annual dues to $15.00. They were reluctant to do it, but economic reality left them no choice.

Interface Age Replies

The publishers of *Interface Age* Magazine have answered the SCCS lawsuit, essentially denying all allegations. They also filed a cross complaint alledging that certain persons related to SCCS have defamed Bob Jones and that SCCS is unfairly competing with him and sought to enjoin them from doing so. Jones sought a preliminary injunction, but the court refused to grant it.

SCCS at NCC

SCCS will present a session entitled "How to Get Started in Personal Computing" at the National Computer Conference in Dallas. The conference is June 13-16 and our session is on the 15th.

Burning Out

Like any volunteer organization, SCCS experiences a good deal of turnover amongst the people who do the work. Since the beginning of the year, a number of board members have burned out, and we've been too busy to thank them for their work. Art Armstrong, George Attwood, John Bordus, Ron Carlson, Lew Fite, Rudy Hirschmann, Alan Hussey, and Russ Lotter, have all had to resign from the board, although several of them continue to work on *Interface* or committees. Thanks guys!

Two officers have also had to resign, Gene Murrow and Wayne Brady. Both worked countless hours and just couldn't afford the time. Phil C. de Baca has agreed to fill in for Wayne, but the secretary spot is still open.

Clubs and Chapters

What A Great Way To Run A Club

We heard from the North Orange County Computer Club today, and really liked what we heard. According to Gary Covington III, a member of their board of directors, the goal of the club is to get every member's computer working as a system. There are currently 65 computers which belong to club members and about 45 of them are working as systems. Gary coordinates the effort to get everyone's machine running, which requires a lot of time, but he feels that he couldn't have gotten his system up without the help of the club, and tells those he helps to "pay" by helping two others.

This sort of assistance for newcomers should be a central service of every club.

Interested? They meet the first Sunday of each month at Langsdorf Hall at California State University at Fullerton. Call President Lorin Mohler at (714) 998-5831 for further information.

Pomona, CA

The Pomona Valley Chapter of SCCS has been formed. Meetings are at the Pomona Public Library. Contact Al Sutton at (714) 593-3587, x 207, or (714) 593-6635.

Ham / Computerfest

The Jefferson Amateur Radio Club and the Crescent City Computer Club would like to announce the New Orleans Hamfest/Computerfest which will be held at the Hilton Inn in Kenner, LA (directly across from the New Orleans International Airport) September 24 & 25. This is the ARRL Delta Division Convention for 1977 and is the largest "Ham" outing in the deep south. This will not only be the largest Computerfest, but it is the *only* Computerfest in the area.

This year's event will feature a banquet Saturday night with entertainment, *two days* of commercial exhibits, fleamarkets and forums. There will also be a hospitality room, ladies events, FCC examinations and more.

This years grand prize is a complete Drake "C-Line" ham station and many door prizes will be awarded each day.

Information on tickets, room reservations and etc. will be furnished upon request by contacting the New Orleans Hamfest/Computerfest; P. O. Box 10111; Jefferson, LA 70181.

Utah

The Utah computer Association meets the last Saturday of each month, alternating their meeting places between Salt Lake, Provo, and Ogden. For information call Ernie Dixon (801) 467-9100 between 6 and 9 P.M.

Southern Orange County

Robert Bocek, (714) 768-0585, is interested in forming a chapter. Give him a call if you live in the southern portion of Orange County.

Minnesota

We heard from Jean Rice, President of the Minnesota Chapter. They have public access timesharing terminals at three libraries in the Minneapolis, St. Paul area (call David Waldemar (612) 830-4962 for information). The computer time is from TIES, one of the best known (to me at least) computers-in-schools projects in the country.

These folks sure seem to be very well organized with lots of resources and energy!

Phoenix, AZ

The Arizona Computer Society is a group of Phoenix area computer hobbiests holding regular meetings on the 2nd. Tuesday of each month from 7:00 to 10:00 P.M. at room 226, De Vry Institute, 4702 N. 24th. St., Phoenix, Az. We have approximately 150 persons on our mailing list and attendance at our regular meetings runs between 40 and 70. Officers and directors are as follows: Harry Stanton—president, John Krohmer—vice president, Jim Sheafor—secretary, Chuck Watson—treasurer, David Farnsworth, Ray More, Tom Ohlin, Otto Weeden, George Yool—directors.

Texas

The Permian Basin Computer Group in the Midland and Odessa area of Texas is still meeting once a month. The Midland Group meets the second Monday each month at 7:30 P.M. in the Student Union Building on the Midland College campus. The Odessa Group meets the second Saturday each month at 1 P.M. in the Electronic Technology Building, Room 203, on the Odessa College campus. For additional information write John Rabenaldt, Box 3912, Odessa, TX 79760 or phone 915-332-9151, 9 A.M.-5 P.M. M-F, or 915-697-4607, after 6 P.M.

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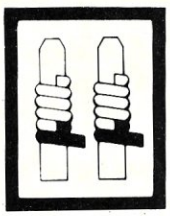

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The SCCS Empire

I receive many letters like John Stetts' on page 9 asking why our publication schedule is erratic and why our cover date is inaccurate. The answer involves two interrelated factors: people and money. We are short on both, but perhaps that isn't obvious given the professional appearance of *Interface*.

I had my eyes opened to the possible confusion by a call from a man in Minnesota the other day. When I told him that I would have to have Phil C. deBaca contact him regarding delivery of his magazine, he asked me to put him through to Phil on the switchboard. *Switchboard!* How many of you think that we have a switchboard?

In reality, SCCS is run by members from their homes, on a volunteer basis. We have .4 employees (me, I'm paid for two days per week). The distribution department is Phil's living room, the mailing list resided in the trunk of Russ Lotter's car until he burned out, the editorial offices are in my garden shed, etc.

We have learned the hard way that too much reliance on volunteers is uneconomical in the long run, and we are trying to professionalize the operation. The magazine will become more regular if we succeed.

We have decided to fix the out of synch cover date in a straightforward manner: we are arbitrarily redefining it so that it reflects reality. We are not calling this issue of *Interface* "March", but "July".

This is just my way of saying "please be patient, we are doing the best we can under the circumstances."

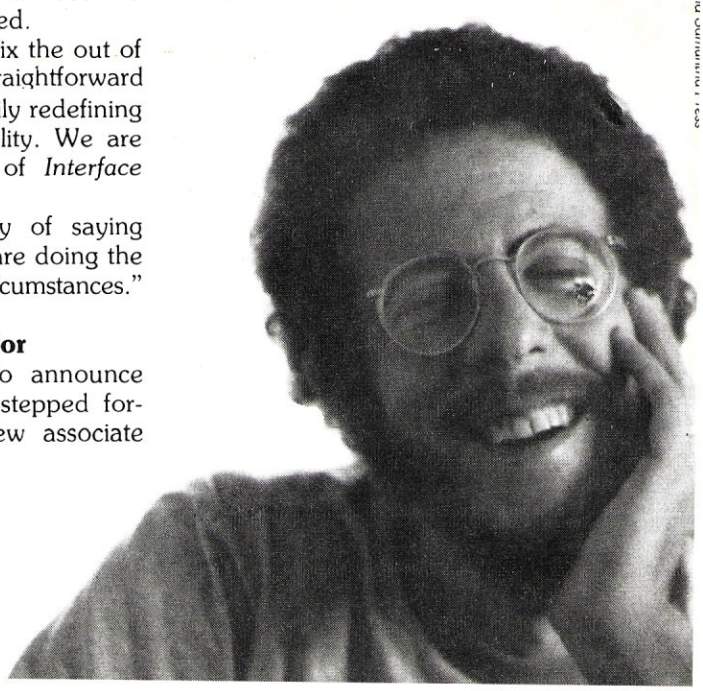
A New Associate Editor

I'm really pleased to announce that Ron Carlson has stepped forward to become a new associate editor. Ron's primary interest will be book reviews, but he is a pretty enthusiastic guy and we probably won't be able to keep him from doing more. Ron is one of those people who are extremely competent in both hardware and software. He knows the Mark 8 better than anyone on Earth and is quite current in several areas of Computer Science. Last week he told me that he bought a milling machine, because he is working on a robot—it will be a pet dog with articulated legs and enough pattern recognition skill to step over all objects in its path with the exception of socks. It will pick up socks and put them away.

Contact Ron if you'd like to help with reviews of books, articles, films, etc.

If any other members are interested in the possibility of editing an existing department or creating a new one, please let me know.

Larry Press
Editor



Fast Feedback on SCCS

Unlike a commercial publication, *SCCS Interface* belongs to its readers – the members of SCCS. You can use the magazine as a forum for your ideas and you can shape it by giving us feedback.

We would like to use the reader service card as a feedback channel. You may respond to the following poll by circling the appropriate numbers on the reader service card and returning it.

We also encourage you to submit questions to be used in these polls and to drop us a note if none of the replies reflects your opinion.

New Poll

In this issue, we charged the format of the New Products section. There are more releases, but they are very short and we have dropped the photographs.

133 I like the indepth releases in February better.
134 These are better, but show a few *small* photos.
135 I like these best—fit in as many as possible, and I'll use the Fast Feedback card for more information.

In the last two issues, *we have dropped the Science Fiction Corner* to cut cost. We chose it because it was not "strictly computer". If we had to skip a department in a future issue, which one(s) would you drop? (Circle more than one if you wish).

136 Editorial
137 President's Message
138 Calendar
139 Society News
140 Clubs and Chapters
141 Letters to the Editor
142 Applications Exchange
143 New Products
144 Science Fiction
145 Helpful Hints
146 Games and Things
147 Book Reviews
148 Unclassified
149 Reprints
150 Fast Feedback

Which are your favorite department(s), i.e., those that you wouldn't want us to ever skip?

151 Editorial
152 President's Message
153 Calendar
154 Society News
155 Clubs and Chapters
156 Letters to the Editor
157 Applications Exchange
158 New Products
159 Science Fiction
160 Helpful Hints
161 Games and Things
162 Book Reviews
163 Unclassified
164 Reprints
165 Fast Feedback

At the West Coast Computer Faire, officers of clubs from around the country discussed the topic of a national organization. Which of the following overall structures makes most sense to you?

166 None, I still see no need for it.
167 A federation of computer clubs.
168 A monolithic organization of individuals.
169 A hybrid with regional representation.
170 A hybrid with local chapters.

A session at the National Computer Conference will be devoted to this question. Please send us your thoughts.

Results From Last Poll

Last time, we asked four questions and the results (percentages) were as follows:

The name SCCS should be changed to reflect our national and international scope.

I Agree = 42%
I am indifferent = 31%
I disagree = 27%

A number of members have expressed interest in lifetime membership. Would you be interested in becoming a lifetime member if the cost were in the range of $100 to $150?

Yes = 34%
No = 66%

We are encouraging readers to submit short contributions as well as full length articles for publication. Are short statements of fact or opinion of interest to you?

I like them = 85%
I am indifferent = 15%
I don't feel they're appropriate = 3%

We have run interviews of a number of industry leaders. Do you like this sort of article?

I like them = 59%
I am indifferent = 27%
I don't feel they're appropriate = 14%

The results speak for themselves. We will continue to stress short contributions, but will not have an interview each issue. The results have been given to the board.

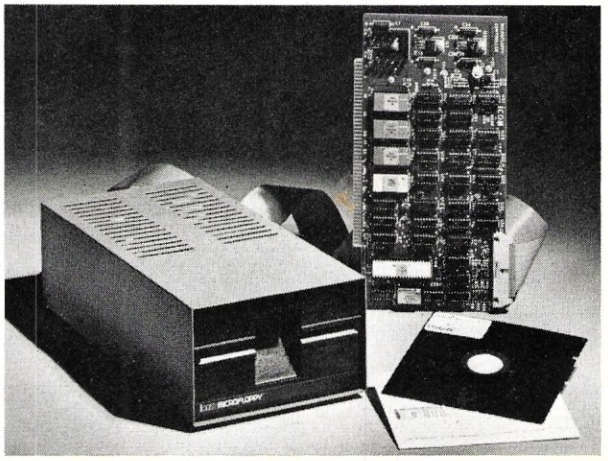
Fast Feedback Poll

Guess who just bought our new Microfloppy™ for $1095 including software?

Plug-compatible for $1095

iCOM's brand new Microfloppy™ is specifically designed for the personal computer user. It's smaller, using the new 5¼-inch diskette, and is priced at only $1095 including disk drive, power supply, cabinet, controller/interface card, all cables and connectors, plus, on diskette, iCOM's new FDOS-M software, including assembler, editor, and file manager. And for a limited time,* you also get an 8K Disk BASIC package at no extra cost.

Best of all, iCOM's Microfloppy™ is fully assembled and tested. It's 100% compatible with Altair, IMSAI, Poly 88 and other microcomputers using the Altair bus format.



Much faster than a cassette

This compact, economical Floppy Disk System is 10 to 15 times faster than a cassette. Programs can be loaded in seconds, a source program of several thousand characters can be corrected and a new file stored on diskette in less than a minute. Any of up to 175 files can be reached in 1.5 seconds.

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Letters

Helpful Feedback

Hi,
If you really want to change your name, the name I like best appears on page 2 of the January '77 issue, "The International Society of Computer Buffs". Personally, I feel you should put off this idea for a few years and just solve your problems with Group Purchase and the lawsuit. Going national will only make them worse. Also, no matter what you call yourselves, I won't consider you a national group until your Board and Executive Committee are a national group and not all Californians. Can you really afford this now?

On finances, why don't you raise the out-of-state membership fee. Something like $15 — 20 wouldn't be too bad. You could then give a discount of out-of-state clubs which join as a group, still keeping the net fee above that charged in-state members and clubs.

On *Interface*. I received the January '77 issue on March 4th. Are you really that far behind or do I have a postal problem? *On Content*. Don't delete anything. I like it. I really like and *NEED*, Tricia Wood's articles.

Looking forward to hearing from you,
John S. Stetts

How Sweet It Is

Dear Wayne [Brady],

I appreciate your conscientious effort to recover our losses. May I suggest that the remainder of my credit be applied to an SCCS membership extension. If this is acceptable, please inform me of the new expiration date.
Thank you,

Dean Smith
Costa Mesa, CA 92626

Dear Dean,
It's acceptable! Thanks.
Wayne

How Nice Of Computers and People

Dear Larry,

I have just read your editorial in the December 1976 issue of SCCS *Interface*. More power to you, and to you all! Congratulations on hanging in there!

Please send me a full page ad (free) to go into the next issue of our magazine *Computers and People*.

I would like to make you all a present of this space — since we are the oldest magazine in the computer field (we started publishing in 1951). With best wishes you you,

Edmund C. Berkeley
Editor

Computers and People

Dear Ed,
First of all, thank you so much. Second, I have been a reader of your magazine since 1960, when it was called Computers and Automation. It has always been unique and valuable.
Larry

Feedback to Tricia

Dear Tricia [Wood],

I'm glad to see that you plan to write your column! I'm a novice hardware person and can really use what you're planning! In particular, I'd like to see early on articles on tools, workspace, basic soldering and grounding techniques, etc., *All* the suggestions in the December '76 issue sound good to me.

I'm also glad to see a woman's name in a computer hobby magazine. They've been much too one sided until now. I consider myself a male women's libber.
Best of Luck,

Sigurd Anderson
Good Hope
Box 248 RD #3
Elkton, MD 21921

More Feedback

Dear Larry,

This is just a short note to tell you how pleased I am with *SCCS Interface*. It is, in my opinion, the best personal computing magazine on the market.

You asked for readers' opinions: I feel that articles on the construction of personal systems and their use is most important. The February issue was excellent in this respect. I am also interested in product critiques. However, I feel that product articles by the manufacturers' employees are simply advertisements.

I recently installed an iCOM Microfloppy on my TDL Z80 equipped IMSAI. This turned out to be a non-trivial exercise — both in hardware and software.
Sincerely,

Michael J. Stimson, Ph.D.

ICOM, Was First

Dear Mr. Press,

I have just finished reading the January issue of *Interface* and overall found it to be interesting and informative (especially the front cover and associated article). However, I must take exception with your comment following the North Star new product announcement on page 44. You stated that " . . . these fellows seem to be the *first* to get the whole package together." As you may know, we at the iCOM Division of PCC began shipment of our Microfloppy® in mid December of 1976.
Very truly yours,

Curt Burkett
Electronics Engineering Manager
iCOM Microperipherals

Letters

Fear of Commercialism

Dear Larry,

I'm writing this both as a member of SCCS and an associate editor of SCCS *Interface*.

First of all, I appreciate all the work you've done to get SCCS *Interface* off the ground again. I know it hasn't been easy, and you should be proud of the results so far.

However, the first two issues have something in common that I find disturbing, especially if they indicate the beginning of a trend. (I'm referring of course, to the first two issues since our separation from the previous publishing service.)

Both issues have pictures of commercial vendors on the cover. Now I recognize that it's important to us hobbiests to know what's going on with the people and corporations who make and sell the equipment we buy, and I find such articles on the inside interesting. But such commercial-looking displays on the covers really make it look as though SCCS Interface is pushing commercial products.

How about a little more emphasis on what the members are doing with their computers? I think the covers would be a lot more appealing if they featured some interesting home computer set-up, or maybe some color (Dazzler-type) graphics or computer-generated art.

I always tend to be suspicious of how "close" a vendor is with a magazine when I see his picture on the cover. Is the magazine really being unbiased about his products? Some such magazines seem to be filled with sales pitches. I happen to know this isn't a problem with SCCS Interface, but does everyone else know it? I think we'd be better off if we avoided this type of cover (at least most of the time) and therefore avoided the problem.

Sincerely,

Tom Rugg
115 N. Beverly Glen Blvd.
Los Angeles, Calif. 90024

SCCS Member Discount Plan

The Board voted to implement the membership discount plan proposed in Gene Murrow's article in the February *Interface*. The following vendors have sent in discount offers, and we hope to hear from more soon.

Vendor	Item	List	Member Price	Delivery* Options
Computer Power and Light 12331 Ventura Blvd. Studio City, CA 91604	Novation acoustic modem	295	236	LA Meeting C,V
	COMPAL-80 16k computer with terminal	2300	2070	
	COMPAL ASR 33 keyboard	165	125	
	Sanyo VM 4092 9" monitor	185	160	
AAAA Computer Hows 1477 Barrington, suite 17 Los Angeles, CA 90025	IMSAI I-8080 (22 slots)	751	638	LA Meeting C,V
	IMSAI boards	10% discount		
	Polymorphic Poly-88 system 2	735	610	
	PolyMorphic boards	10% discount		
	Seals 8K-KSC-z memory	295	265	
	Other Seals products	10% discount		
Tarbell Electronics 20620 S. Leapwood Ave., suite P Carson, CA	Tarbell Cassette, kit	120	108	LA Meeting C,V
	Tarbell Cassette, assembled	175	157	

*C = COD postage, V = pickup at vendors location.

To place your order, send the following form to:
Box 49707
Los Angeles, CA 90049.

Name _____ List date _____

_____ membership number _____

_____ Phone number _____

Address _____

Item	Vendor name	Delivery option

I understand that the terms of this order are COD and that if I am to pick up any items, I shall do so within 30-60 days of publication of this form.

Signed _____

Memory Addition for the MITS 680

By Frank McCoy

Owners of MITS 680 system might well feel that they've been stuck. The only memory add-on option MITS offers is a fully populated 16k board which costs $685.00 in kit form. Are there others available?

Kilobaud #3 presents a scheme for adapting SD Sales 4k board to the 680, but the project is not simple. The estimated cost for 12k (three boards) is $325.00.

Frank McCoy shows us how to add 1k by piggybacking memory chips. The approach is limited, but it only costs about $35.00 and can be done quickly by a novice.

You remember Frank as the author of the VTL Star Trek program which appeared in the February Interface.

Would you like to double your 680 memory size for about $35.00? Merely piggy-back the memory IC's.

Simply stated, take two 2102 memory IC's, place one on top of the other, so that the locating notches line up, bend up pin 13 (chip select) on the top IC, and solder the rest of the pins together (pin 1 to pin 1, pin 2 to pin 2, etc.). Do this for all of the pins except pin 13. Repeat this for seven more pairs of 2102's for a total of 8 pairs of 16 IC's. Insert the resulting double IC's into the memory sockets, C through K, on the 680 main board.

You will now have 2 IC's sitting in each of the 8 memory sockets, with pin 13 of the lower IC fitting into the socket and pin 13 of the upper IC sticking up into the air.

Next, take a small piece of buss-wire and lay it across the top of the 2102's and solder it to pin 13 that is sticking up from the top 8 chips. Since pin 13 is the chip select for the 2102, all we now have to do is provide the decoding to select the extra chip when desired. This is done by piggy-backing a 74LS30 onto the one that presently provides the decoding for the 8 original memory IC's.

The 74LS30 is piggy-backed in a similar manner to the way that the 2102's were. The main difference is that pins 6 and 8 are bent up and separated instead of pin 13. Once the piggy-backed 74LS30 is reinstalled in its socket, (socket AA), a connection is made from pin 8 of the 74LS30 to the common pin 13's of the 2102's. Pin 6 of the 74LS30 must be connected to the hole market A10 on the 680 main board. This hole is next to IC socket AA so it is easy to find.

Your new memory is now ready to try out. But, one final note: you might not have the low profile sockets for the memory chips. If so, there is a chance that the power transformer might interfere with the increased height of the memory. If it does then you will have to remount the transformer out of the way.

Now you can run MINI-TREK, LIFE, TIC-TAC-TOE, or any of the other VTL programs that require 2k or less memory.

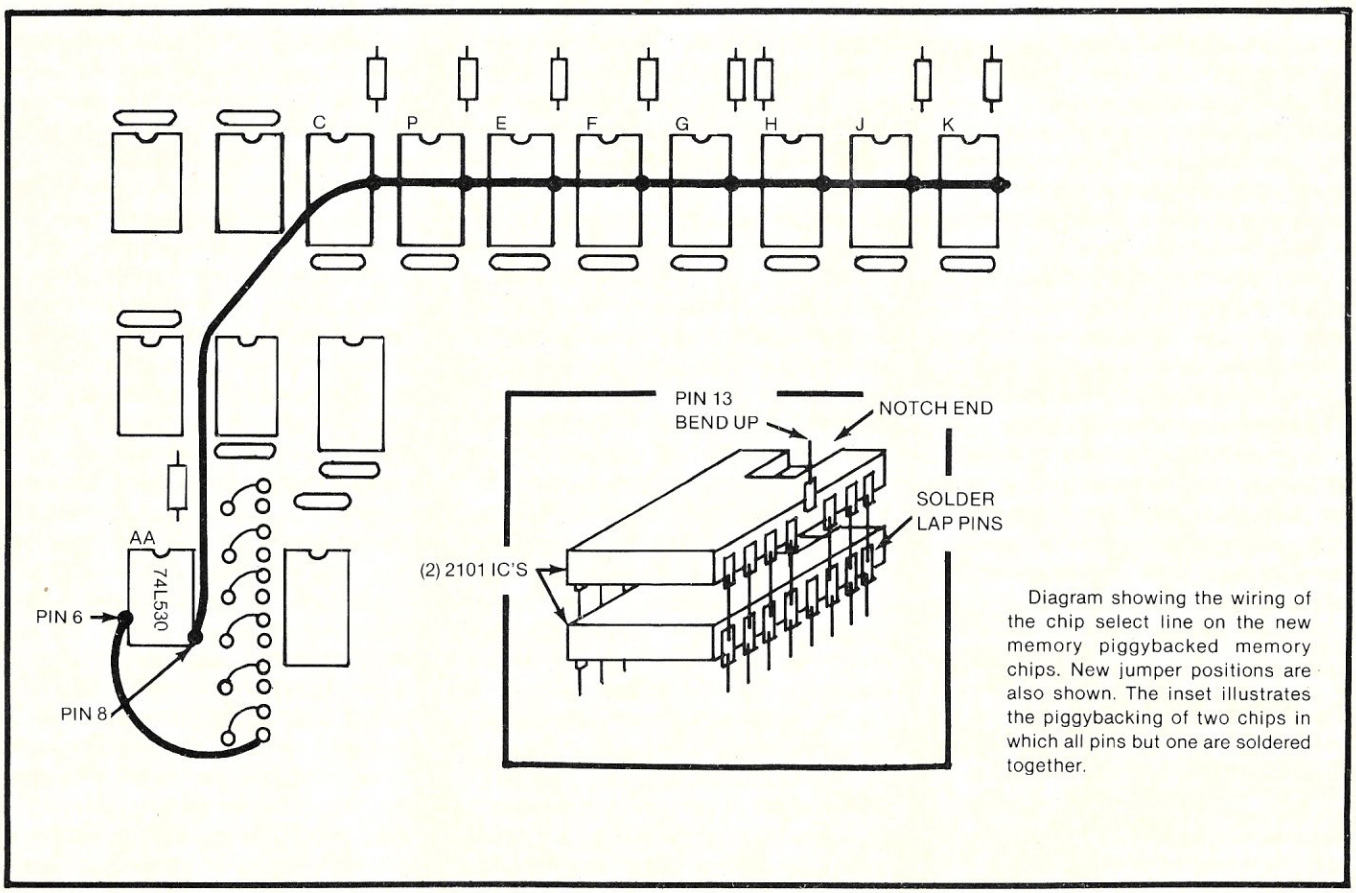


Diagram showing the wiring of the chip select line on the new memory piggybacked memory chips. New jumper positions are also shown. The inset illustrates the piggybacking of two chips in which all pins but one are soldered together.

Frank McCoy may be reached at: 4942 West 130th Street Hawthorne, CA 90250

Going Into Your Community

Have you thought about taking your computer into your community? The articles which follow suggest two ways you might do it.

Joanne Verplank tells you how to get involved with kids at a school, library, etc. Joanne is the director of the Community Computer Center and has worked with computers and school children about as long and effectively as anyone, anywhere.

Bob Wallace briefly describes several community oriented information retrieval systems. Bob has a long standing interest in the humane uses of computers, is very active in the Northwest Computer Club (who first published a version of this article), is involved with the Retail Computer Store in Seattle, and is a graduate student.

Those interested in community information systems should note that Andrew Clements became coordinator for that area this month (see page 27) and he has names and addresses of other people who are working as community memories.

Joanne Koitnow Verplank
may be reached at:
CCC
1919 Menalto Ave.
Menlo Park, CA 94025

Bob Wallace
may be reached c/o.
Northwest Computer Club
Box 242, Renton, WA 98055

Community Information Systems

By Bob Wallace

Communities are defined by communications between people. Just as a house becomes a home when residents get to know each other, a bunch of people become a community when they exchange information. Traditionally, neighborhoods relied on close blood relationships, a united response to natural disasters, and gossiping between old friends to maintain a community spirit. Today, family ties are weaker, big government handles our problems, and people move too frequently to form many long term friendships. New methods of community communication are needed.

The community memory is an approach to this problem. Members put in short messages, or "items", into the group mind, along with keywords describing the message. The item may be just "I am here; I'm interested in X, contact me if you're also interested in X"; it can function as a classified ad, like selling a car or finding a babysitter; it can be a piece of dialog in a community discussion; there are many ways people use such systems. A computerized data base program functions well as a community memory, although keysort cards provide a low cost alternative.

The first computer community memory experiment occurred in the San Francisco area several years ago. They put five terminals in the Bay area running a simple keyword retrieval system. The idea was a success—musicians found new band members using a terminal in a Berkeley record shop, a multiple-author story based loosely on Firesign Theater evolved, cars were sold and babysitters found. The project finally died due to lack of money. See Figure 1.

A self-supporting community memory has operated for some time, serving the Pacific Northwest region on a mail order basis. ComNet uses keysort cards to store information about members, and generate directories by keywords such as 'energy', 'food and farming', 'media', 'education', and so on. ComNet is at Box 5599, Seattle, WA 98105; send a self-addressed, stamped envelope (SASE) for more information.

On a neighborhood basis, Peter and Trudy Jounson-Lenz have used their terminal and donated computer time to process a block-grant questionnaire for Lake Oswego, Oregon. Neighbors drop in to search the data base for nearby people with skills to trade or common interests. The APL program they developed is very flexible in generating reports for their community. A description of the program is available for $1 and a SASE (695 5th Ave., Lake Oswego, OR 97034). Steve Johnson of "Rain" magazine (2270 NW Irving, Portland, OR 97210) is developing a neighborhood information and skills exchange for the Northwest Portland area, which may use Peter and Trudy's program.

Brian Livingston is developing the Cascadian Regional Library, using keysort cards now, and later a computer. It will keep regional information about many topics, such as land use, health, and media, typeset the information and print it. More information is available from CAREL, Box 1255, Eugene, OR 97401.

A new community memory, the Cruncher, is undergoing final development in the Bay area. Designed by Lee Felsenstein (who did the Processor Technology VDM and the M & R Enterprises Pennywhistle Modem), the system operates out of a van, using as LSI-11 based keyword retrieval system operating in batch mode. Typically, the van will set up at a central meeting place in a rural area, set up several input terminals, and receive items from community members. Later in the day, the system "crunches" the data, producing directories organized by keyword. Finally, these directories are given to the community for further distribution. The list of keywords is maintained by a "gatekeeper" or librarian, working closely with the folks using the data. More information is available from the Journal of Community Communications, 1807 Delaware St., Berkeley, CA 94703 (include $.24 postage).

Good, cheap Chinese restaurant in downtown Oakland. Economy Cafe, Franklin at 8th. Noodles, won-ton (very good), lots of food, about $1.25.
Keywords: dinner, lunch, supper, cheap, food, Chinese, Cantonese, restaurant, economy.

Beware of Decker Auto Parks (a wrecking yard in Oakland). I had to take them to small claims court in order to get a refund for defective merchandise.
Keywords: auto parts, wrecker, wrecking, econoline, junkyard, court, Decker.

Spinning and weaving guild interested in new members. Contact Donna Dobkin 658-4872.
Keywords: Spinning, weaving, crafts, textiles, guilds.

It's so easy to get lost in those lovely deep eyes/never ending or beginning. There is so much I cannot see, so much inside she will not let go/not long enough to let it shine/I wonder if she believes me when I tell her that I love her?
Regi, if you ever read this I want you to know what I can never say: you are a beautiful, complete woman and why the world is not in love with you constantly, I will never know. I do love you.
Keywords: Regina, love.

Anyone interested in the possibility of starting a fabric and yard goods store based on the spirit of collectivism and people's prices should get in touch with me.
Keywords: collectives, anarchists, fabric, fabric yard goods, cooperative.

An average adult needs about 70 grams of protein daily. Are you an average adult? The following portions of food will provide 20 grams of protein: 9 oz. whole milk, 9 oz. tofu, 7 oz. bologna, 7 oz. frankfurters, . . .
Keywords: milk, tofu, bologna, baloney, franks, frankfurters, . . .

Barbie, look under the keyword "Hollie." Dina.
Keywords: xxx.

When installing a new muffler, do yourself a favor. Install a new tailpipe as well. It may save you much trouble later on.
Keywords: auto, auto parts, repair, repairman, mechanic, muffler, tailpipe.

I have a month old nubian goat for sale. You'd love her. 642-3065, David.
Keywords: goat, livestock, pets, animals.

Figure 1. Lee Felsenstein sent us examples of the sorts of entries which found their way into the original community memory data file. People found unusual, unanticipated uses for the system, assigned their own keywords, and were personally responsible for the validity of their own entries.

Have Micro, Will Travel

By Joanne Koltnow Verplank

This article is designed to answer the "how do I do it" questions of people who would like to share their computers with others. It will also hopefully spark the imaginations of those readers who had not previously considered this use for their computers.

The idea for such an article has been perking for some time and was finally concretized after my visit to a meeting of the Southern California Computer Society (SCCS).

For the past year or so, since I began hearing about personally owned computers, I felt that they were no more than expensive toys, and that people were trying to justify the expense when they talked about the practical uses to which their computers could be put. Whether, in fact, they are used for entertainment or for other purposes, personal computers are certainly gaining in popularity. Clubs have developed and publications have been started which help the increasing number of computer owners to communicate with one another. This communication and its consequent sharing of knowledge is important if we are not to have countless individuals each solving the same problems that others have already finished. The clubs and publications provide a means by which computer owners can share their experiences with other owners. What is needed now is a way for owners to share their *computers* with non-owners. I suggest that the sharing will give satisfaction to both parties in the arrangement, and that it will be relatively easy to accomplish.

Some background: I work at the Community Computer Center, a place dedicated to sharing computer power. We teach classes and generally make our computer available to the public. We have been doing this for four years, and while we're still struggling financially, we have had a great deal of experience in acquainting people

with computers. The visitors to the center (mostly children) are excited by what's available, and we enjoy teaching and experimenting with new ideas.

The computer center is a unique place, and it's easy to forget that sharing one's own computer is harder for an individual than it is for us (at this point in our existence). After talking with some people at the SCCS meeting, I got an insight into the problems facing potential computer sharers. The advice: "Take your computer into a school library," is really inadequate for someone who is inexperienced in working with children. Keeping a group of children relatively quiet and interested, while teaching them something, is no small task for the novice.

In the rest of this paper, I will outline things to say to get yourself and your computer installed in a school or library. More important, I will tell you just what to do when you get there. These suggestions are culled from several years of teaching at the computer center as well as from teaching in public schools before that. They serve a dual purpose: they will hopefully intrigue more people into sharing their computers and will also fulfill my promise to provide help for people who have already decided to take their computers into the community.

I will discuss taking computers to schools and to libraries. The category "libraries" can be expanded to include community centers and Y's. If you like structure, schools are the easiest places to work in. In schools, the students are disciplined already, and the teacher will probably handle the logistics. Schools have the inconvenience of being open only during the hours when most people are working, however, so you may have to settle for one of the other locations.

Schools

Let's consider schools first. Many teachers will be happy for you to bring something educational into the classroom and to work with small groups of children on a regular basis. The key words here are *educational* and *regular*. Teachers are interested in education and in the dependability of their volunteers. It will be helpful if you schedule a regular time for your visits, so they can be worked into the classroom schedule. (You may also find takers for a one-shot demo if you're not sure you want to commit yourself to regular visits. The same suggestions will apply as for a series.)

On the educational value of computers—your computer in the flesh as opposed to an abstract concept:

1. *New experiences are educational.* Seeing a computer close up and working with it fits nicely here.

2. *Computers are increasingly part of our lives.* Your visits may become part of a unit on computers, or on modern technology. You may become a resource person for class projects.

3. *Computers can perform operations very quickly, but they have to be instructed precisely.* This can relate to language and math curricula. You may decide to show some examples of how imprecise thinking can lead to an unexpected result in a program.

4. *Computer games/exercises are available that strengthen logical thinking, teach specific concepts, and develop skills in various areas.* Figure 1 relates some computer games and curriculum areas.

Use these arguments, and any others you may think of, and be prepared to show the teacher a sample of what you'll be doing. The sample may not be necessary, but it will probably transform the teacher into an active fan. The games/exercises we use at the center really are fun for the players and also help develop and strengthen skills that educators are interested in. In fact, the teacher may see classroom applications that you had not thought of.

Once you're in the classroom, tell the teacher that you'll work with a small group of children. The group size will depend on the kind of display your terminal has. It will also be affected by how comfortable you are with groups of youngsters. You'll want to have few enough to keep them interested and relatively quiet, but enough for an interaction among them and a discussion of their strategies. Three to five is a comfortable group size.

	Computer Games											
Curriculum Areas	Animal	Bagels	Cricket	Hurkle	Jotto	Letter	Number	Snake	Stars	Story	Taxman	Wumpus
Numeration-greater than, less than			x	x		x	x		x			
Estimation, prediction		x	x	x	x	x	x		x			x
Logical reasoning	x	x	x	x	x	x	x	x	x		x	x
Sequencing/pattern finding	x	x		x	x	x	x	x	x			x
Alphabetizing						x						
Reading	x									x	x	x
Spelling	x				x			x		x		
Strategy formation		x	x	x	x	x	x	x	x		x	x
Problem solving		x	x	x	x	x	x	x	x		x	x
Multiplication (factors)											x	
Recording data		x	x	x	x	x	x		x			x
Following written directions	x	x	x	x	x					x	x	x
Writing sequences	x											

Figure 1. Relation Between Curriculum Areas and Computer Games

For simplicity, I operate the terminal when I'm teaching a game or when I'm working with a large group. This lets the students concentrate on learning and playing. They can sit back from the terminal and you don't have to worry about their pushing one another in their enthusiasm, or fumbling with the keys while others are waiting impatiently. Players don't have to press the keys to be involved in the game. There is an advantage, however, in being in a small group for decision-making, so I divide large groups into smaller teams.

If you have a program that is totally do-it-yourself, you can fade into the background. The players will relate to the game instead of to you, and they will learn to be precise in their responses, so the games will go smoothly. This will also lead to their becoming self-sufficient, one of the more general aims of education.

In order to stand alone, a game must catch errors. Some of the messages and error traps we have developed for our games are illustrated in Figure 2, a run of the game STARS.

STARS is a good beginning game for any age group. The computer's responses are visual rather than verbal, and STARS can be played successfully by beginners, while advanced players take the challenge of breaking the code.

One of the recent changes we made at the center was setting the base level in all the games rather low. That way we can be sure that beginners can have a comfortable level on which to explore. More advanced players can change the difficulty of the game.

Our philosophy in teaching is to make the exercise easy to learn, then to teach people how to set the difficulty level themselves. We also want players to be able to stop the game easily. Most of our games respond to the following commands:

HELP—which prints directions
RANGE—which lets the player change the difficulty level (see Figure 3)
STOP—which stops the game
QUIT—which gives the answer

The incorporation of these key-

```
*** CCC GAMES MONITOR ***

GAME? STARS

I HAVE AN INTEGER FROM 1 TO 25

YOUR GUESS? HELP
I HAVE AN INTEGER FROM 1 TO 25
YOU ARE TRYING TO GUESS IT.
AFTER EACH GUESS, I WILL GIVE YOU STARS(*).
THE MORE *S YOU GET, THE CLOSER YOU ARE.

TO STOP PLAYING TYPE STOP
FOR A LIST OF SPECIAL WORDS TYPE WORDS

YOUR GUESS? 21
* *

YOUR GUESS? 12
* * * * *

YOUR GUESS? 9
* * *

YOUR GUESS? 11
* * * *

YOUR GUESS? 13
* * * * * * * * * * * * * * * * * * * * * * * *
*** YOU GOT IT IN 5 TURNS ***
```

Figure 2. A run of the game STARS

```
GAME? STARS

I HAVE AN INTEGER FROM 1 TO 25

YOUR GUESS? RANGE
MINIMUM? 20
MAXIMUM? 40

I HAVE AN INTEGER FROM 20 TO 40

YOUR GUESS? 24
* *

YOUR GUESS? 12
PLEASE TYPE AN INTEGER FROM 20 TO 40
TO GET HELP TYPE HELP
```

Figure 3. Illustration of the RANGE command

words into our games has made running the center and teaching classes much easier.

From STARS, you can go in different ways, depending on the time you have and the capabilities of your computer. Install yourself in the school library or learning center, and expose the whole school to your micro via STARS. Or, at the other extreme, take one group in the class, and go as far with them as they can go before you take on another group. Your time and the students' responses will help you decide.

I usually first teach simple games requiring the student to guess a number (NUMBER, STARS) or a word (SNAKE). Our game STORY is also good for beginners: the student answers some questions and then a personalized story is printed out. I follow these with more sophisticated guessing games such as BAGELS (the object is to guess a 2-digit number) and JOTTO (you are told how many letters in your guess are in a target word).

Next come strategy games such as HURKLE (you try to locate a hurkle hiding on a 6 by 6 grid) and WUMPUS (hunt the wumpus through a series of caves that must be explored while avoiding nasty dangers). If the students understand multiplication and factors, the game TAXMAN can also be introduced at this stage.*

You can use this series with almost any age group if you pace it to their learning rate. Introduce a few games at a time (maybe just one), and encourage the players to explore until they're comfortable with the game and can operate on various difficulty levels. This method avoids having them try all the games at once, then get "bored" and want more because they think they know them all. If players get in the habit of exploring each new set of games, you'll better know their capabilities, and they'll ultimately gain more from the experience.

Students who are between turns at the computer can take the computer's part and play the games with another group of students. Practice this with them, so you can see that they understand the computer's role in various games. With young children, I usually take the part of the computer first. We often begin with NUMBER. I tell them that I'm going to think of a number and they are going to try to guess it. I give them the same clues the computer uses (try bigger, try smaller), and I count the turns it takes them to guess my number. I remind them that the computer doesn't make mistakes when it gives the clues, so they should be very careful. I also remind them that once the computer picks the number, it doesn't change its mind even if someone guesses it on the first try.

If they're playing STARS, make sure the "computer" understands how to use the formula the program uses to compute the stars. Give them a card with the code:

1 away — 7 stars (range of 1 to 100)
2-3 away — 6 stars
4-7 away — 5 stars
8-15 away — 4 stars
16-31 away — 3 stars
32-63 away — 2 stars
64 or more away — 1 star

If you're this far along, you've obviously been successful in managing the programs, and the students are happy. You might at this point consider introducing simulations or teaching programming. Keep the teacher informed of your progress and of the educational benefits of what you're doing.

Libraries

If you can't get away from work to go to a school, there's always the library. Here, the organization will probably be left up to you, and you might want to consider all the possibilities before you begin. You can bring your computer and let whoever wants to, play with it. You might also teach groups, or choose something in between. Pick a method you'll enjoy and feel comfortable doing. You might go a few times before word gets around, but soon you'll have a crowd. Decide how you want to manage the computer vultures — those people who monopolize the terminal. Maybe set a time limit or simply have the same game and expect that people will play for a time and then move on. Perhaps you can start a club for the vultures. They might turn out to be your best helpers.

The library is an especially good setting for the "do-it-yourself" program. You can fade into the bookshelves and watch people read the instructions and try the computer. It's a good idea to explain the educational aspect of this experience, just as you would with a teacher. Who knows what will come of it. Maybe the library will make a special exhibit, so people can read about your computer and its predecessors. Perhaps the local paper will write up your visits to the library or the school. An article will be good publicity for them and will help encourage others who want to take their micro into the public eye.

Last Word

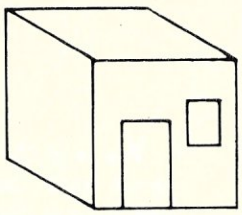
Someone said that he had trouble with people trying to crash his system. My advice was to try to avoid them. If it's a high school group, go to the lower grades; if it's a certain group at the library, restrict the access to your computer. I suspect the incidence of this will be slight if you're sure of what you want to offer. Present your computer for a specific use rather than just to be played with in general. Remember, you're sharing it, but if you're unhappy with the use it's being put to, you can always look for a more appreciative audience.

*Sample runs of these games are available as SCCS reprints (see page 32). For BASIC listings and paper tapes, contact Joanne directly.

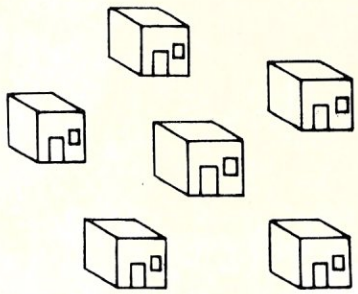
8080 BASIC Source Listing Available

The entire source listing and documentation for an 8080 BASIC interpreter has been published in Dr. Dobbs Journal, Box E, Menlo Park, CA 94025 ($12 per year). Studying this listing would be a most valuable experience for learning 8080 programming techniques, learning the structure of an interpreter and in learning of techniques used for specific tasks such as floating point arithmetic, expression parsins, input scanning, etc. A six month study project for the novice programmer.

WE'VE GOT IT ALL TOGETHER



One Big Store
Us



Lotta Little Stores
THEM

People ask us when we're going to open more stores. That would be a logical result of our success. We've expanded, but all in one location, in Santa Monica. This means we have more people, more demonstration equipment, more inventory, and more spare parts. We've concentrated our resources. For the very best information and service, ask us, we're

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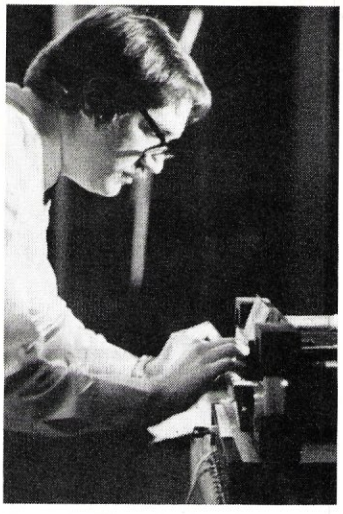
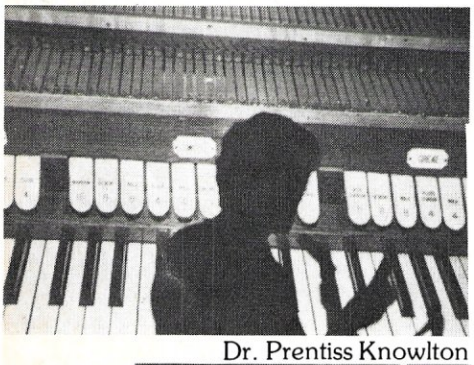
The SCCS Computer Music Symposium

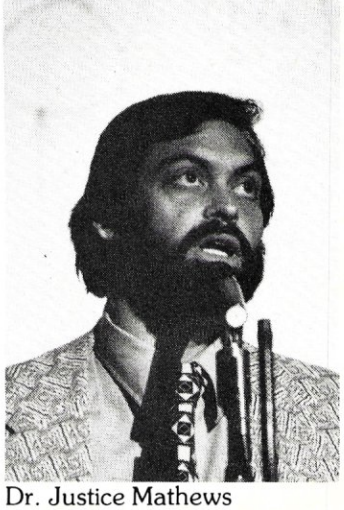
William Sinclair



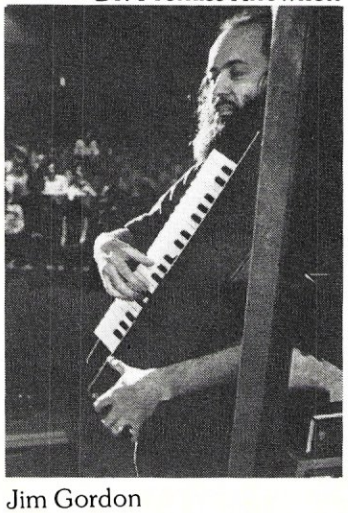
Dr. Leland Smith Dr. John Chowning



Dr. Prentiss Knowlton



Dr. Justice Mathews



Jim Gordon

Bill Sinclair
Symposium Organizer

We recently held an all day computer music symposium. The symposium was held on February 9. Most of the speakers presented musical compositions, so a special quadriphonic sound system was installed. The symposium was also recorded on a professional quality four track recorder and a stereo cassettee is being prepared for those who were unable to attend.

The program began with an introduction by Lou Fields and William Sinclair, the symposium program chairman. The first topic was presented by Drs. Phillip Springer and Ray Jurgens. Dr. Springer began by playing his electronic composition for the TV movies "The Space Watch Murders". It was coordinated with an excellent slide show. Then he gave a brief talk on the traditional uses of synthesizers, i.e., how waveforms are manipulated to get various effects. Dr. Jurgens augmented the talk with a discussion of how computers, particularly micros, could be used in music.

The second speaker was Dr. Prentiss Knowlton, SCCS coordinator for music. Dr. Knowlton has interfaced a PDP-8 with a pipe organ, and has given several concerts where classical and popular compositions were played on his system. He presented a composition by Mozart at the introduction of his talk. He then presented slides showing how his system works. Dr. Knowlton has produced LP records of two of his concerts and you should contact him if you are interested.

The next speaker was Jim Gordon, a studio musician who also has a flair for computers. Jim demonstrated his IMSAI driven percussion synthesizer, and then, much to the delight of the audience, he and his guitarist friend John Lyon jammed with the synthe-

sizer while it played a blues pattern (see the cover photo). Jim also had an Advent TV monitor which showed the real time display of the state on the synthesizer system.

After a short break, William Sinclair presented his system, which consists of a Nova 1200 mini, an organ keyboard for input, and a simple 4 voice synthesizer as output. Mr. Sinclair described and demonstrated various algorithms for producing musical effects where the computer augments what the performer plays in real time.

Some of the ideas were automatic 2, 3, and 4 part harmony, complex polyrhythmic melodic sequences, harp and zither-like arpeggios, and spatial effects. At the conclusion of his presentation, the audience demanded a jam session with Jim Gordon and their machines.

The next presentations were by Drs. John Chowning and Leland Smith, both from the Stanford University Artificial Intelligence Lab. Their research uses a PDP-11 to generate sounds for psych-accoustic research and music by direct digital synthesis. Every fragment of every waveform for four channels is computed at a very high rate of speed. Chowning's algorithms can simulate doppler, binaural delay, reverberation, and various other audio cues to provide some startling effects, which he demonstrated. Dr. Chowning has also done extensive research into the audio spectra of various instruments and used this facility for musical composition and for determining how much information can be deleted from a sound before a human can detect a difference. He described his technique for generating complex timbres by means of FM synthesism, which is regarded as one of the most valuable recent contributions to electronic music. Chowning finished up with one of his musical compositions.

Dr Leland Smith, a colleague of Chowning, spoke on inputting and outputting scores in musical notation. His system enables a composer to enter a score naturally and the output may be played or printed with a quality comparable to the best musical publishing. He also played an original composition.

Next, Dr. Judson Mathews, from California State University, described a system which uses a mini-computer to control a real-time patching network between analog synthesis components. Most of his talk was a description of the system and the language used to control it; however, he played an impressive composition at the end of his talk.

The symposium concluded with a presentation by Jerome Winker, who is a consultant to Sperry-Rand and completing work on a PhD in musicology. The subject of his thesis is computer analysis of folk tunes. He has been studying Canadian folk tunes, and he discussed the results of his analysis. He also described MUSTRAN, a widely accepted notational system for representing music alphanumerically for input to a computer. We hope to have an article on MUSTRAN soon.

The entire symposium was recorded, and a condensed version of the highlights will be available soon on a 90 minute stereo cassette. The cost has not been firmed up yet, but the price will be about $4 plus postage for members and $6 plus postage for others. If interested, contact Barton Phillips.

What To Do If You Missed It

Contact an Author. Their names and addresses follow, and they can furnish more information on their projects.

Recording. A cassette recording is being prepared. Contact Barton Phillips or watch the pages of *Interface*.

Barton Phillips
c/o SCCs Program Committee
Box 54751
Los Angeles, CA 90054

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La Crescenta, CA 91214

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Jim Gordon
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Dr. Ray Jurgens
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La Canada, CA

Dr. Phillip Springer
15001 McKendree
Pacific Palisades, CA

Dr. Justice Mathews
Department of Music
Cal State Long Beach
Long Beach, CA

A Hot Faire

We attended the First West Coast Computer Faire in San Francisco right around income tax time. It was a very high energy event, attended by 12,750 computer phreaques.

The Faire was modelled on a professional conference with commercial exhibits (about 200), a technical program with refereed papers (about 100), and a soon to be published book of proceedings.

The exhibits were generally very slick, professional and costly. A nice innovation were low cost mini-booths, where small, low-key folks could exhibit without spending as much for space and staff. As a co-sponsor, SCCS has a complimentary booth, but we didn't feel like renting costly fixtures, so it was very informal.

Everyone we speak to asks what neat new things we saw at the exhibits. The things which caught our attention were music boards from *five* different manufacturers, computer tables on casters from E, S & L, prototypes of Commodore's $500 complete BASIC-running 6502 system, Digital Project's 160 LPM, 132 character printer for $1000, and literature on a planned bit slice kit from Davis Laboratories.* We sure hope that these prototypes aren't paper tigers. No telling what we missed since it was very crowded.

The technical sessions we were able to attend were as well prepared and certainly more interesting than those of the typical NCC or ACM Conference. The only problem with these sessions, as well as the exhibits, was the frustration of having to miss so many.

There were also about 20 homebrew exhibitors. Our favorite was Franz Frederick's homebrew version

*For a list of names and addresses of each of these vendors see the reprint offer on page 32.

of a Project Logo (MIT) "turtle"—a computer controlled robot (shaped like a turtle), which can raise and lower a pen as it moves over a large piece of paper, thereby drawing a picture.

There were also two banquets, but since they were held in a posh hotel, they were very costly and we did not attend.

A special session was held where club "leaders" from around the country met to discuss the rationale for a national organization and to brainstorm alternative structures. Nearly all of the attendees seemed certain that a national organization was a good idea. There was concern that SCCS being national in scope already would cause "political problems". If we are to have a truly national organization, we must devise a system of representation or rotating power locus so that everyone who wishes to can participate. Whether it is called SCCS or something else, seems irrelevant.

In spite of the professional style of the Faire, it had true amateur spirit. We really are in a high energy state; it still hasn't ossified into corporate alienation and domination—it's still model T Fords and aviation before Lindbergh. If there is a second Faire (Jim Warren, the Faire chairperson, was very tired after this one), you should try to make it.

What To Do If You Missed The Faire

Recordings. Butterfly Media Dimensions, 13047 Ventura Blvd., North Hollywood, CA 91604 made recordings of all of the technical sessions and banquet speeches. The regular price per single cassette is $6.95 plus postage and handling. For SCCS members, the price is $5.00. Write for the order form and be sure to include your membership number if you are a member.

Proceedings. A printed proceedings of the conference technical program is now being prepared. The final price and date of availability are not known at press time, but we have been assured that SCCS members will receive a discount. To be notified when the proceedings are available, you may write the Faire at Box 1579, Palo Alto, CA 94302, or watch the pages of *Interface*.

Short Contributions

Interface Mail Stolen

We were out of town for two weeks during April and all of the mail which came into box 5429 during that period was ripped off. Don't ask how, we don't know.

If you sent a reprint request, fast feedback card, letter, product announcement, article, etc. and we have not responded, please try again. If you sent a check to box 5429 around that time and it was cashed, but nothing else happened, please contact us.

In the case of reprint requests, don't send a second payment, but do include a SASE.

Oversights & Fixes

We forgot to credit Dick Dickenson, owner of Computer Components for helping us with the December Cover. Dick supplied the shopping cart full of (naturally) computer components, and you can't guess how early he had to get up to do it. Thanks Dick!

In the December issue, we inadvertently ran an entire Update contribution two times. In the January issue, only one paragraph was inadvertently run in two different places — is that an improvement?

Saving and Loading Data to and From Cassette in BASIC

by Don Tarbell
Associate Editor

It is quite often desirable to save and load data to and from cassette, while running a BASIC program. For example, you might have an inventory program running in BASIC, but it's of limited utility if there is no way to save the inventory on cassette for overnight storage. You can leave the computer running, but if there is an interruption in power, or a computer failure, your inventory is lost.

There are several ways of handling this function, depending on the version of BASIC you use. Some versions of BASIC have a command which can save and load a numerical array to and from cassette. Altair disk BASIC is one of these. The only problem with this is that disk BASIC is fairly large and that strings have to be converted to numerical arrays. Another way is described explicitly by a program on page 15 of the Tarbell Cassette Interface Manual. In this method, the console (TTY, CRT) routines are modified by POKE commands, so that they are temporarily cassette I/O routines. Then the PRINT and INPUT statements may be used to transfer the data. After the data is transferred, POKE statements restore the console routines to their original form. The disadvantage here is that different versions of BASIC have their I/O routines in different places, so the program has to be adapted when changing from one version to another.

Another possibility is to POKE the data into an unused area of memory. The USR function then is used to transfer to your own output routine. This routine only needs to transfer a block of memory onto tape. The USR function can be used with a different argument to run an input routine, then the BASIC program can retrieve the data with the PEEK function. The main problem with this method is that the I/O routines generally have to be loaded separately, and must be written and tested.

Still another way is to use a general purpose monitor program. This program would also be loaded separately, but might reside in read-only-memory (ROM). The monitor would handle all console and cassette I/O. One of the commands in the monitor would be to assign different functions to different I/O devices than normally handle these functions. For example, the console function could be assigned to the cassette interface instead of the TTY. Then PRINT and INPUT statements could be used for I/O to and from cassette.

I am developing a monitor such as this and would like your input. In addition to the ASSIGN command, it will have commands for dumping and loading memory, checking records for errors, and moving data from one area in memory to another.

A Praise / Complaints File?

We recently got an inquiry from Walter Plowan asking if we knew the reputation of two Los Angeles area vendors. We were able to give him an informal reply after a few calls and

would be willing to compile an off-the-record file of praise and complaints to pass on to others. This information would be unpublished, but available on specific request.

Radio Electronics Discount for Members

Radio Electronics is offering one year subscriptions to members of SCCS (and other clubs, we believe). The newstand price is $12.00, the usual subscription rate is $8.75 and SCCS members pay $6.00. Write Harriet I. Matysko, *Radio Electronics*, 200 Park Ave., New York, NY 10003. Tell her you're an SCCS member.

Consumer Reports Report

(Cassette Recorders, Recording Tape and Electronic Kits)

The August 1976 *Consumer Reports* reviews portable cassette recorders. Of course they are interested in them as audio devices but the reviews are interesting. Some of the dimensions and features covered which are of use to computer users are flutter (wavering in tape speed), speed accuracy and sensitivity to voltage fluctuations, rewind time, automatic level control (which may be overridden on some recorders to avoid clipping), auxiliary input jacks, tape counters, earphone output, remote mike switch, automatic shutoff and pause control. Some of these factors are imperative for computer use, and others are just nice.

Thinking of them as audio recorders, *Consumer Reports* rated Sears catalog #21682 ($70), the Panasonic RQ323S ($100), the J.C. Penney Co. 6551 ($70), the Toshiba KT225 ($50) and the Realistic CTR30B ($80) as the top five in descending order.

The Toshiba has no auxiliary input jack, but an accessory "resistor cord" may be used in the mike input. Does anyone have experience with it as an input device?

A final note — I use my computer recorder for interviews and my kids listen to music on it, so don't ignore audio characteristics in choosing one.

The October 1976 *Consumer Reports* reviews recording tape. Their favorites were the BASF Studio Series ($2.99), Maxell UD-XLC60 ($4.60), Scotch Master ($2.59) and the TDK Super Avilyn SAC60 ($3.29). All prices are for 60 minute cassettes. Again, bear in mind that they are concerned with audio performance.

Those who are just starting out in electronics and looking for a supplement to Tricia Wood's tutorial column, might consider getting an electronic education kit. The November 1976 issue of *Consumer Reports* rates a number of these educational kits. The Radio Shack Science Fair 75 in 1 kit sounded good, but check out the reviews in *Consumer Reports*.

We Got a Sol

Processor Technology recently gave Sol computers to *Interface* and a number of other magazines. We haven't yet had much time to do anything with ours but wanted to quickly thank Processor Technology and to give a few first impressions on the Sol.

First the thanks: thanks guys!

Now for the first impressions: Processor Technology features the front and pretty walnut sides of the Sol in their ads, but we liked the back view even better . The back of the Sol is like the back of a hi-fi preamp.There are a number of clearly marked plugs for connecting it to the outside world. They are a video jack, two motor on/off jacks for audio recorders, audio in, audio out, parallel I/O, and serial I/O.

We borrowed a video monitor and a Sears $20 cassette recorder, plugged them into the appropriate jacks, and within about 5 minutes of the time the Sol came out of its box, we were running BASIC. That was an impressive experience. The Sol, like the COMPAL-80 or (yes) the IBM 5100, seems to be a well integrated, ready to run hardware/firmware package.

We read through the BASIC manual and found a few things we liked and didn't like. Some of the things we liked were:

- a very easy to use line editor with provision for inserting or replacing characters
- the ability to read and write audio tape files using the motor on/off controllers mentioned earlier
- eight digits of precision
- the ability to vary the speed of the display and to control the cursor position under program control. This makes for neat affects
- the way the LIST command automatically indents the bodies of FOR loops

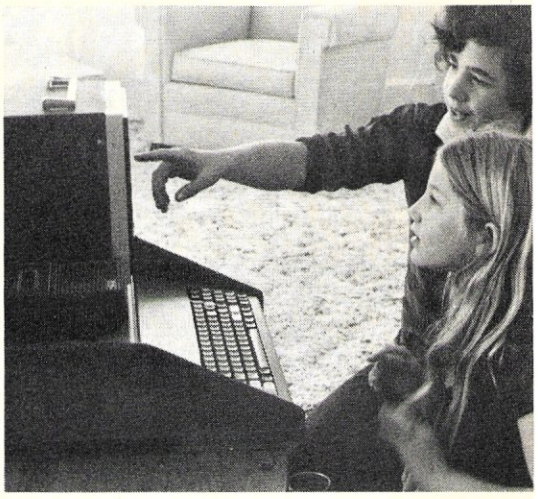
Some of the things we didn't like were:

- there are no string variables
- there is no exponentiation operator
- there are no inverse trig functions
- there is no EXP or LOG

Aside from BASIC, we got a 2K PROM monitor called SOLOS, but since the manual isn't off the Xerox yet, we don't really know what it will do. We've used it to load programs, examine memory, enter hex information into memory and it drives the display; however, without a manual we haven't been able to discover the neat debugging features that we know must be lurking on the PROM.

That's about it for first impressions, we will have more by next issue, assuming we get the time to play a bit and a copy of the SOLOS manual.

Oh yes, a final tidbit. We asked what Sol stood for. It turns out to be named after Les *Sol*omon, editor of *Popular Electronics*.



Within an hour of getting it, the Sol was doing long division homework for Samantha Press and John was creating jazzy affects on the monitor by displaying random strings at random speeds.

A Schematic Reading Tip

Bob Keene has a quick tip for reading schematics. He uses different colored pens to mark all of the gates on the same chip. This makes it easier to relate the schematic to the actual board, especially when several gates from one chip are spread all over the drawing. He also colors the positive voltages with red.

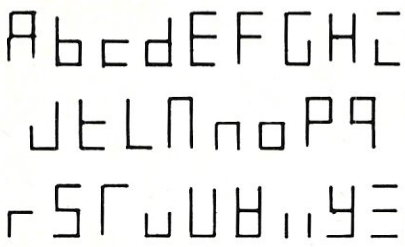
Short Contributions

Welcome, Computer Music Journal

The first issue of the *Computer Music Journal* is out and it looks excellent. It is 64 densely packed pages. The articles are in depth and for the fairly serious computer music fan. Most impressive is the 35 page article surveying Signal Processing Aspects of Computer Music. People interested in high data rates, even if their applications are not musical, should watch this journal as well, because digital synthesis involves high data rates. Write John Snell, Editor at Box E, Menlo Park, CA 94025. Send $14 to subscribe for 1 year or $26 for two.

7 Segment Alpha

This is C.R. Britten's idea for a pseudo-alpha character set using 7 segment displays. It appears in the Northwest Computer Club Newsletter.



Computer Store Innovations

In the February issue we announced our plan to publicize innovative services offered by computer stores. Our hope is that this will help the stores serve better and raise the expectations of the customer. Several stores have responded so far.

The Byte Shop in Palo Alto, California wrote us of two unique services. The first is an across the board discount of 15% on all books to members of the local computer club. The second is a kit "insurance policy" which guarantees that you will get your kit assembled and running with, if necessary, the help of their equipment and technicians. The cost of the policy is a function of the cost of the kit.

Computer Mart in Orange, California stresses hardware maintenance. They have three full time technicians and will work hourly or on a contract basis on any Altair bus based equipment.

Computer Mart in New York, will burn PROM's for customers as will the **Berkeley California Byte Shop.** They also lease micros.

Bits N Bytes in Fullerton, California lets customers have the "run of the shop." A Tektronix 551 and workspace are available on a non-interference basis.

Audio Action Electronics in Daly City, California publishes a list of S-100 "compatible" boards. For a copy, write them at 323 So. Mayfair, Daly City, CA. 94015, and send a SASE.

SCCS at NEPCON

SCCS organized three two hour sessions at the NEPCON Microelectronics Conference held last month. The sessions were pulled together by members Mike Nell, George Attwood, Lou Fields, Phil C. de Baca, Bob Keene and others. Speakers included Dennis Brown of Wavemate, Eddie Curry of MITS, Dave Wexstein and Gene Sprouse of Rainbow Electronics and Larry Press of *Interface*.

MITS Stockholders Say "OK"

On May 9th MITS stockholders approve the acquisition of MITS by Pertec. A ten day waiting period must now pass before its final, but the deal seems solid.

MITS stockholders received 746, 154 shares of Pertec stock, which sells for roughly $6.50 per share.

Computers in Education

A 21 page, annotated bibliography on computers in education, written by Eugene Collins and Patrick Leonard is available from the National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091.

Privacy Journal

We got a blurb on the *Privacy Journal,* a monthly devoted to privacy in the computer age. It seems to deal with all sorts of infringements, not just data base problems. For a subscription ($35!) or more information, write P.O. Box 8844, Washington D.C., 20003.

Helpful Hints, or What I Had To Learn To Build a Computer

Schematics and Data Sheets

By Tricia Wood, Associate Editor

This month's article deals with two topics: reading schematics and data sheets.

A schematic is a symbolic description of an electronic circuit. One must learn to read these diagrams if he will ever be building a computer or any kind of circuit. They provide a way to "see" the circuit and to "test" it out before it is actually put together.

The art of reading schematics can be broken down into learning the symbols and learning how to trace the connections between the symbols. Neither of these talents are difficult to acquire but the hard part comes when you think you have a short somewhere in your system and try to use the schematic to trace the wires. This is to say that, in theory, learning what schematics are is fairly easy but to put them into use takes practice.

Last month we looked at various symbols used in logic diagrams. Table 1 is a list of the additional symbols I had to learn in order to build my microcomputer. I might add that these aren't the only symbols that exist and that there are alternatives for several components.

Table 2 shows symbols used for switches. SP = *S*ingle *P*ole, DP = *D*ouble *P*ole, ST = *S*ingle *T*hrow, DT = *D*ouble *T*hrow. The dotted lines symbolize mechanical links inside the actual switch.

The connections between these symbols are generally drawn lines. Certain Conventions are usually observed when drawing these lines. Table 3 shows two different ways to symbolize connections of crossing wires and also shows how to draw crossing wires that aren't supposed to make a connection. Once you have decided on a convention, stick with it.

There is a very simple circuit in my house for the door bell. I will describe it here. Try to draw the schematic for the system (you will find the answer on page 43). Next to the front door is the door bell switch. It is an SPST pushbutton switch. There is a bell hanging on the hallway wall. When drawing this system schematically, keep in mind that the power (a direct current source) must come from somewhere.

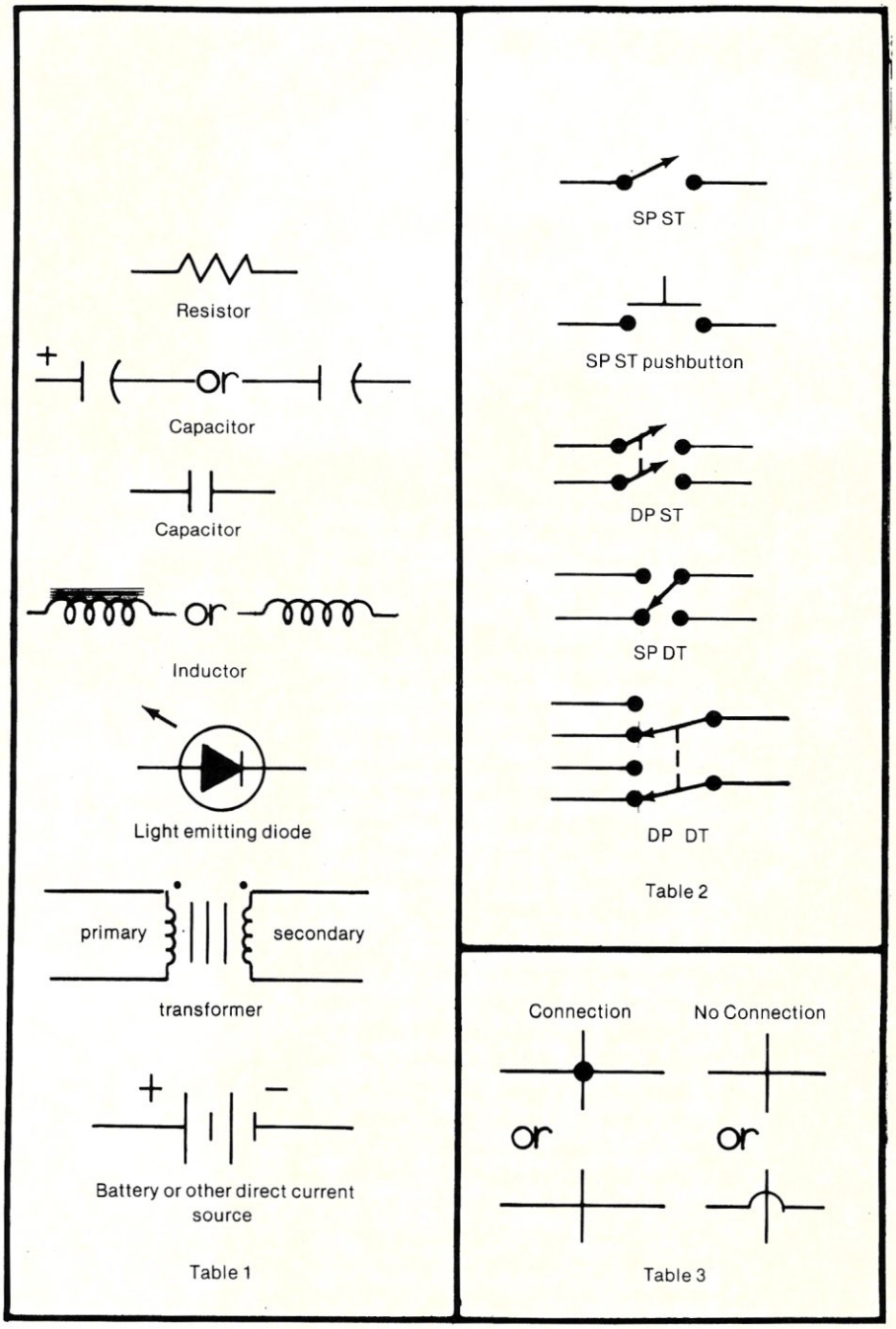
Now that you've thoroughly mastered the art of schematic reading, we will move on the data sheets. A data sheet is a technical description of an integrated circuit or a similar device such as a voltage regulator. The sheet is usually supplied with the product by the manufacturer, but sometimes has to be purchased separately. Many manufacturers put out books with data sheets on commonly used products. These books can be purchased from the companies listed at the end of the article.

I will now describe some of the information on a typical data sheet for an integrated circuit. There is an introduction including a summary of the basic features of the chip. This could be a brief statement about power requirements, what the chip was designed for, why you should use this chip instead of a different kind, etc. This introduction is followed by a more general description of the chip. This description could include facts about the "insides" of the chip, as it were.

There will usually be a "pin-out". This is a box with lines drawn from it to represent each pin. The function of the pin is printed on these lines. The function may be power input, output of a data bit, etc. Somewhere near the pin-out is a block diagram or logic diagram describing the internal functions of the chip. There may also be a table or chart showing what the absolute maximum ratings for storage temperature, power disapation, input and output voltages, etc.

There could be a table of combinations to describe the logic functions of the chip. You can tell such things as: at a given point in time, if pin 1 is high, what will be the state of pin 9?

As usual, I would suggest that you do a little experimenting. Try to identify the symbols on a logic diagram in a magazine article and get over to a Radio Shack or another store and build some circuits. Get a data sheet and go over it with a knowledgable club member. A good book covering the reading of data sheets among other topics is *Understanding Solid State Electronics*, available from Radio Shack. If you'd like to get a data book, write Texas Instruments, Box 5474, Dallas TX 75222, National Semiconductor, 2900 Semiconductor Dr., Santa Clara CA 95051 or Signtics, 8111 Arques Ave., Sunnyvale, CA 94086.



H8 is coming!

The 8-bit computer that's easier and more convenient to use. Featuring an intelligent front panel with octal data entry and control, 9-digit octal readout and a built-in ROM monitor with bootstrap for one-button program loading and storing. And a fully buffered bus and mother board with plenty of slots for memory and I/O interfaces. With complete system software included!

Gomoku Tournament

By Laurence Mazlack

Gomoku is a non-trivial, simply stated game with a history of over two thousand years. The game may be thought of as being five-in-a-row tic-tac-toe played on a 19 x 19 matrix. A guaranteed winning strategy is unknown.

The game may be played easily at an unsophisticated level. However, a winning game plan may require quite a lot of sophistication. Programs playing the game may profitably utilize book moves, look ahead, and pattern recognition.

On November 27 and 28, 1976, the second computer Gomoku tournament was held. Eleven programs competed (up from four last year). The third tournament will be held November 26-27, 1977. Detailed rules and an entry form are available from Lawrence J. Mazlack, Computer Science, University of Guelph, Guelph, Ontario, Canada.

On request, our mailing list is available (38 addresses). A complete set of the 1976 tournament's games is available for the reproduction cost of $5.00.

Tiny Pilot

By Bob Albrecht, Associate Editor

Everyone knows about Tiny BASIC which was kicked off by the Peoples Computer Company (PCC), Box E, Menlo Park, CA 94025. Now we're doing Tiny PILOT.

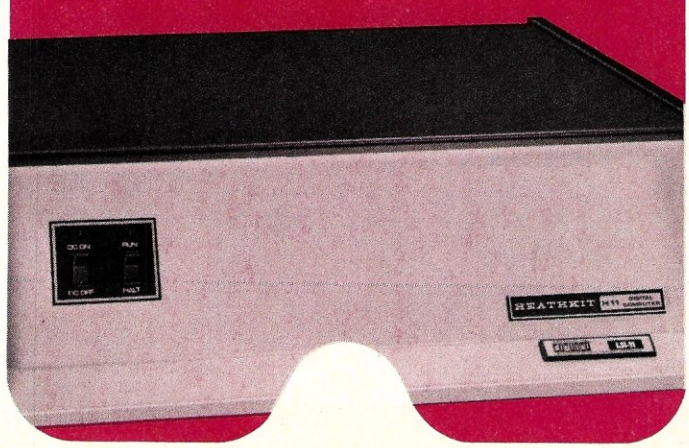
Traditional programming languages are often stumbling blocks to teachers who don't want to learn to program but want to use computers to teach particular subjects via instructional dialogues. Many people have found that PILOT is a way around the problem. The language is compact and powerful, well-suited for computer assisted instruction (CAI) which requires little computing facility.

Home and school microcomputers are proliferating at a rapid rate; now is the time to get easy-to-learn and easy-to-use languages onto cheap computers and into the hands of students and teachers.

Preliminary info on PILOT appeared in the November 1976 issue of PCC. The project to design Tiny PILOT began in the January 1977 issue of PCC and will continue until the job gets done.

H11 is coming!

A 16-bit mini-computer with the power and versatility for any application! Features wired and tested LSI central processing unit, and complete system software.



Plus software!

Both the H8 and H11 computers include BASIC, assembler, editor and debug programs at no extra cost! Applications programs are also available at nominal cost.

Computer Chess Newsletter

By Doug Penrod
1445 La Cima Road, Santa Barbara, CA 93101

After trying to get someone else to start a computer chess organization with a journal or newsletter, I have decided to try to start a Computer Chess Newsletter to be based on Hal Singer's Micro-8 Newsletter, which consists of contributions by the readers.

This is a plea for contributions in the form of letters, comments, news items, questions, chess programs, computer chess game reports, or whatever might be of interest. If you know of a computer chess program that can be made available to others, let us know about it. If you are working on a chess program, tell us how you got started, your ideas on how to do it etc. Maybe you'd like to get one of the three (or more?) programs now available — one for the KIM, one in MITS 8k Basic, one in 8080 assembly language, and translate it.

Anyone interested in receiving the first issue should send a letter enclosing two 13¢ stamps to defray the costs of the first issue. The final price, size, and frequency of issue cannot yet be decided; it depends upon how many are interested and how many contribute.

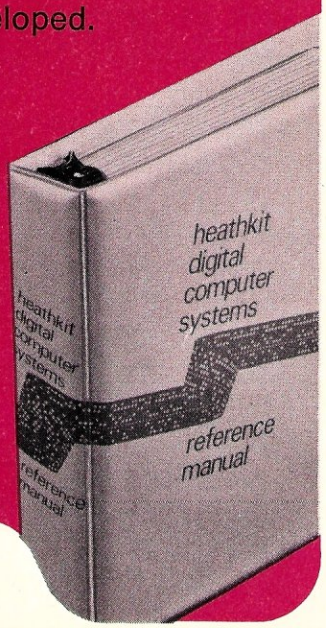
Health Users Group Forming

I'm starting a users' group and newsletter (BUSS) for the exchange of information on use of Heathkits by computer hobbyists. This will be independent of, and have no formal relationship with, Heath Company. However, they have agreed to assist us by sending me copies of press releases issued on their computer kits. Since BUSS can be put out in less time than a magazine it will povide early information on Heathkit computers. If you'd like to receive future copies, let me know. *I ask only that you tell me how you found out about it.*

Charles Floto
267 Willow St.
New Haven, CT 06511

Plus support!

A user's group with newsletters, a complete software library with access to all programs developed. And programmed instruction courses in BASIC and assembly language to help you learn programming fast and easy.



Applications Exchange

By Larry Press

The Applications Exchange is intended to serve as a switch board, putting members with specialized information and interests in touch with each other.

A coordinator may be passive, merely maintaining a mailing list and putting people in touch with each other, or more active; for instance, organizing a periodic SASE Newsletter, writing for Interface, or soliciting interesting contributions to Interface. The basic philosophy is decentralization, so each coordinator sets his or her own style.

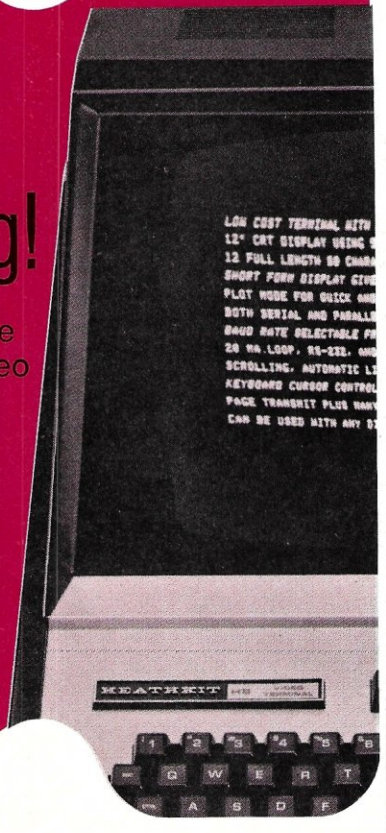
Wouldn't you like to be a happy go lucky coordinator?

H10 is coming!

The paper tape reader/punch with reliable, trouble-free mass storage capability. Uses standard 1" roll or fan-fold 8-level paper tape, and features totally independent operation of punch and reader, plus a copy mode for fast, easy tape duplication.

H9 is coming!

The greatest value in a complete video terminal kit available. With full ASCII keyboard, bright 12" CRT display, all standard serial I/O interfaces, 110-9600 selectable baud rate.



Applications Exchange Coordinators

Secondary Schools:
Art Armstrong,
3345 Moore St.,
Los Angeles, CA 90066
(213) 397-3874

Commodity and stock price prediction:
Mary Stevens,
11745 Montana Ave., #110,
Los Angeles, CA 90049
(213) 472-1098

Programs for small children:
Joanne Verplank,
1919 Menalto Ave.,
Menlo Park, CA 94025

Astrology and ESP:
Al Manning,
ESP Laboratory,
7559 Santa Monica Blvd.,
Los Angeles, CA 90046
(213) 876-9984

Translation and Teaching of Natural Languages:
Bob Keene,
Box 234,
Simi Valley, CA 93065

Medical applications:
Lou Fields,
11662 Sunset Blvd.,
Los Angeles, CA 90049
(213) 272-0942

Dick Moberg,
Department of Neurosurgery,
Jefferson Medical College,
Philadelphia, PA 19107

Biofeedback:
Larry Press,
1702 Ashland,
Santa Monica, CA 90405
(213) 396-0048

Biorythms:
Art Childs,
335 N. Adams, #210,
Glendale, CA 91206
(213) 243-5179

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Legal Implications of Personal Computing
Mike Scott
523 W. 6th St. #440
Los Angeles, CA 90014
(213) 625-1666

Computer graphics:
John de Longpre,
11464 Bailey Dr.,
Lowell, MI 49331
(616) 897-5822

Amateur Radio Applications
AMRAD,
1524 Springvale Ave.,
McLean, NJ 22101

Mark-8 hardware, corrections, add-ons, and software:
Ronald Carlson,
14014 Panay, #255,
Marina del Rey, CA 90291

Robotics:
Glenn Norris,
USRS,
Box 26484,
Albuquerque, NM 87102

Voice synthesis:
D. Lloyd Rice,
821 Pacific, #4,
Santa Monica, CA 90405
(213) 392-5230

Games
G. C. Covington III
1714 Larkspur Dr.
Placentia, CA 92670
(714) 528-4438

Electronic music:
Prentiss Knowlton,
255 N. Madison Ave.,
Pasadena, CA 91101
(213) 449-6034
Suite #4.

Watch for the NEW Heathkit® low cost personal computer systems in the next issue!

(See them at PC-77, Atlantic City, New Jersey, August 28th and 29th)

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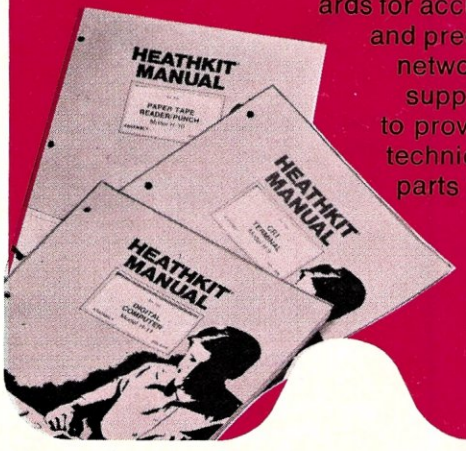
Plus service and documentation

The H8 and H11 computers and peripherals have been developed by the world's largest manufacturer of electronic kits, with hardware assembly and operation manuals plus software documentation that sets new standards for accuracy, clarity and precision. And a network of service support locations to provide qualified technical help, fast parts replacement and service by trained technicians.



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3734 W. Slauson,
Los Angeles, CA 90043
(213) 299-4439

VTL/2
Frank McCoy
4942 W. 130th St.
Hawthorne, CA 90250
(213) 644-7395

Management of Energy in Buildings
Mark Miller
821 Walnut St.
Chico, CA 95926
(916) 342-6102

Statistical Applications
Barry Gerber
Community Cancer Control
712 S. Curson Ave.
Los Angeles, CA 90036
(213) 938-2608

Poly Morphic Hardware, Software, Corrections and Addons.
S. Roger Lewis
1477 Barrington #17
Los Angeles, CA 90025
(213) 477-8478

Computer Chess
Doug Penrod
1445 La Cima Road
Santa Barbara, CA
93101

Humane and Community Computing
Andrew Clement
789 West 18th Avenue
Vancouver B. C.
Canada V5Z IWI
(604) 874-6740

Professional Computer Societies

By Jim Levin, Associate Editor

There are three big, well established computer societies that personal computer people might be interested in: IEEE/Computer Society (oriented toward computer hardware interests), ACM (oriented toward software), and DPMA (oriented toward business data processing). In general, the advantage to belonging to any of these societies is access to information. Each society publishes journals (with special member rates); each holds conferences where papers are presented and where hardware/software is displayed; and each serves as a way to meet people with interests similar to your own.

The IEEE (Institute of Electrical Engineers) is a professional engineering association — you must be a professional engineer to join. However, non-engineers can join the IEEE Computer Society as associate members or as student members. IEEE/CS puts out three journals of interest: *Computer* (containing survey and tutorial papers on a different theme each issue), *IEEE Transactions on Computers* (with state-of-the-art research and design papers), and *IEEE Transactions on Software Engineering* (a new journal with research papers on computer software). For information on joining IEEE/CS, contact IEEE Computer Society, 5855 Naples Plaza, Suite 301, Long Beach, California 90803, (213) 438-9951.

ACM may be of interest to those into the software side of personal computing. ACM stands for Association for CoMputing. ACM puts out several journals of interest to personal computer people: *Computing Surveys* (introductory tutorials for those with only a minimal background in the particular subareas covered), *Communications of the ACM* (broad based pragmatic coverage of computer science), *Journal of the ACM* (scholarly technical articles in the field), and *Computing Reviews* (critical reviews of articles and publications). To join ACM, you have to be a computer science professional. However, an important component of ACM if the set of special interest groups (SIGs), which are semi-autonomous organizations forcused on particular areas of computer science, which non-professionals can join without joining ACM, SIGs of possible interest to PC People are: SIGART (ARTificial intelligence), SIGCAPH (Computers And the Physically Handicapped), SIGCAS (Computers and Society), SIGCUE (Computer Uses in Education), SIGGRAPH (computer GRAPHics), SIGLASH (Language Analysis and Studies in the Humanities), SIGMICRO (MICROprogramming), SIGMINI (MINI computers), SIGOPS (OPerating Systems), SIGPLAN (Programming LANguages), SIGSIM (SIMulation), SIGSOC (SOCial and behavioral science computing), and SICSOFT (Special Interest Committee in SOFTware engineering). There is presently a movement to start a SIC-I (Special Intertest Committee on Individual Computers). For more detailed descriptions of any of these SIGs/SICs, write to the ACM Headquarters, 1133 Avenue of the Americas, New York, NY 10036. Anyone interested in having SIC-I started should write the headquarters to let their interest be known.

Finally, for those into business data processing, there is DPMA the (Data Processing Management Association). This organization is oriented almost entirely toward professionals involved in business uses of computers. It holds conferences, local chapter meetings, and seminars, and publishes the monthly magazine *Data Management*. People interested in business uses of their personal machines can learn more about DPMA by writing to Data Processing Management Association, 505 Busse Highway, Park Ridge, Illinois 60068.

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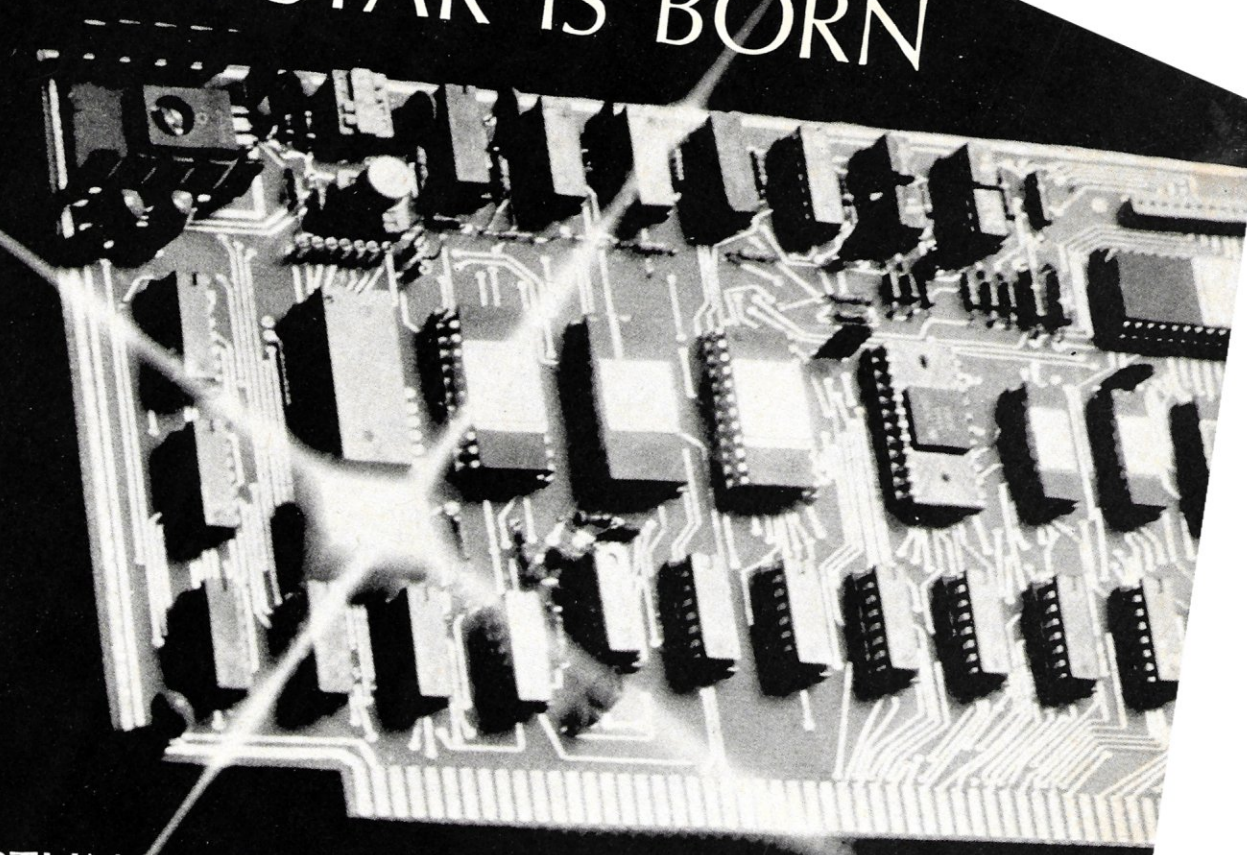
A STAR IS BORN



TDL's STARTLING NEW Z80 SYSTEM MONITOR BOARD

Replaces 4 basic boards in your system.
Integrates their functions fully into a single module.
Radically simplifies the development of your system.
Adds more versatility and performance than you'd believe possible.

- **Fully S100 bus compatible** • Power on start-up so no front panel is needed • Wait state circuitry • Fully solder masked and silk-screened Documentation includes complete software listings of the Zapple Monitor • Minimizes interfacing problems • Like having your own resident technical expert to help set up your system • Saves space for more cards • To duplicate the SMB, you'd have to spend $500 or more on separate boards.
- **2 Serial I/O and 1 Parallel I/O port.** Both serial I/O ports may be individually configured for any baud rate between 110 and 9600, in either RS232 or Current Loop configuration. The parallel port is 8 bits in or out with a status bit. All ports directly controllable by the monitor.
- **1200 BAUD audio cassette interface.** Has its own dedicated serial port and utilizes an asynchronous phase-encoding technique for high reliability and broad speed tolerance. Most important, ALL TDL software will be available on cassette in this format.
- **2K of high speed low power RAM.** Uses 1Kx4, 350ns static RAM chips, and does double duty for either add-on monitor routines (for your own special I/O) or program workspace.
- **2K Zapple Monitor in Masked ROM** gives you perfect system control direct from the console. It has 27 Commands (including 3 user defined) and offers program debug routines.

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Let TDL's System Monitor Board star in your computer system. Hurry, use coupon below to order, or call (609) 921-0321

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New Products

Software

8080 Editor and Operating System

Circle number 1 on Fast Feedback card

Two software packages, EDIT, an 8080 text editor and SOS a small (1682 byte, read only) operating system are available from LSM Engineering.

SOS is $15 and EDIT $22.50 on Tarbell cassette or paper tape. LSM Engineering, Box 3243, Orange, CA 92665.

These include source *listings, as should* any *software product—editor.*

13K Disk BASIC

Circle number 2 on Fast Feedback card

DISK BASIC ETC, an interpreter for 8080-based microcomputers, was co-developed by John Arnold and Dick Whipple of Tyler, Texas, authors of the original Tiny BASIC. The sector-based DOS, which works with the iCOM floppy disk controller, makes available up to three memory buffer files to the user.

The disk software includes six file manipulation commands plus SAVE and LOAD. It uses the lower 12 KB of memory plus 1 KB of scratchpad, and is supplied on a certified minifloppy disk, or on a regular floppy disk, along with a comprehensive user's manual.

Delivery is immediate and the price is $50.00. The manual sells for $10.00 separately. Binary Systems, 634 S. Central Expressway, Richardson, TX; (214) 231-1096.

Co-Resident 8080 Editor/Assembler

Circle number 4 on Fast Feedback card

Tychon, Incorporated is pleased to announce its co-resident editor/assembler (TEA) for 8080 systems. Requiring only 5K of memory (R/W or PROM) it is completely I/O independent relying upon its own I/O software or the I/O routines already available in a user's system.

The editor/assembler is relocatable using a special relocator within the program which will place TEA anywhere in the 8080's memory space.

Prices start at $35 for a paper tape version plus the User's Manual. Tychon, Inc., Blacksburg, VA 24060; (703) 951-9030.

6800 Text Editor

Circle number 5 on Fast Feedback card

TSC is pleased to announce the availability of the first of several large scale programs for the 6800 microprocessor. The new TSC text editing system is the most extensive editor available to the micro user and is intended for those with serious needs. As with all TSC software, a complete *source listing,* hex dump listing, sample output and complete users manual are all provided.

The price is $23.50. Technical Systems Consultants, Box 2574 W. Lafayette, IN 47906.

SC/MP NIBL Chips and Manual

Circle number 3 on Fast Feedback card

NIBL, a Tiny BASIC like language has been developed by National for the SC/MP. NIBL is currently available on paper tape through COMPUTE, the National Semiconductor Microprocessor Users Group newsletter. In preparation is a new self-teaching manual for NIBL and the SC/MP development system, and a NIBL firmware package in PROM.

For a description of the language, see the current issue of *Peoples Computer Company*, Box E, Menlo Park, CA 94025. On the chips and manual, contact Phil Roybal, National Semiconductor, 2900 Semiconductor Drive, Santa Clara, CA 95051.

Assembler/Monitor for the 6800

Circle number 6 on Fast Feedback card

Inpro Micro Systems is pleased to announce the availability of a unique, low-priced *M*ini *I*nstant *K*eyboard *A*ssembler, *D*ebug, and *O*perating *S*ystem (MIKADOS) for developing small to moderate size programs on 6800 based microcomputer systems.

MIKADOS occupies only 2.5K bytes of memory. With a 4K byte system, this leaves 1.5K which can be allocated for user programs and label table.

There are eighteen useful directives which are 'on-line' at all times. They provide I/O, debugging aids, etc.

The price of $12.95 includes a user manual and hex object code listing. Inpro Micro Systems, Box 7776, Van Nuys, CA 91409.

8080 Disassembler

Circle number 7 on Fast Feedback card

We would like to announce the availability of MACRODIS, a dissassembler on Tarbell Cassette. The program automatically finds and lists subroutines, and makes a table of the addresses from which they are called. Features include standard assembler format printout, variable width printing format, and various alternate modes of display, including search and flag for specific codes. The program occupies 4K of RAM.

The price is $24.50. the 32 page manual included in the price may be obtained along for $5.00, which may be applied to the purchase price within 10 days. Rick Gwinn, 304 West Thorn, San Diego, CA 92103.

Digital Group Software

Circle number 8 on Fast Feedback card

An ever-growing number of software packages designed for all levels of support is being offered by the digital Group for the company's line of microprocessor systems.

For only $5 each, the digital Group offers Tiny Basic Extended and a cassette full of game programs. Both are on audio cassette that the Digital Group system can read.

The Digital Group also offers many other software programs. For example: six volumes of Tiny Basic Games, including Chomp, checkers, 20-Questions, Chief and others; "Galaxy," and Z-80 packages including Educator, Assembler, Dis-Assembler and Text-Editor.

Prices range from $5 to $15. The Digital Group, P.O. Box 6528, Denver, Colorado 80206; (303) 777-7133.

8080 Financial Analysis Programs

Circle number 9 on Fast Feedback card

The Management Problem Solving library is a collection of programs dealing with investment analysis, depreciation, loans, present/future values, cash management, and other areas of financial analysis. The library is designed to be used by the non-programmer — a complete user manual is provided. The processing methology and program flow is documented to allow modification and certification of program processing.

The buyer gets not only the current version of the library but also all additions for a two year period. Library updates are issued quarterly and can be acquired for a minimal copying fee. Available in MITS or Northstar disk BASIC.

The price *for SCCS members* is $150 through September 30th. Business Computer Systems, 216 Collies Dr., Springfield, IL 62704; (217) 787-3448.

Two Software Packages for the 8080

Circle number 10 on Fast Feedback card

Cybergraphix has released an 8080 disassembler and a trace program. The disassembler produces a "source" listing in format identical to that produced by an Intel Assembler, as well as an ASCII listing of the object code and a symbol cross reference listing, and a source file on floppy disk or punched paper tape. The trace program is designed as a teaching and trouble-shooting aid, this program resides in memory with the subject program, which is executed under trace control. The machine condition is displayed after each subject instruction is executed.

The costs are $250 each or $400 for both, making this professional software. As such professional support, documentation and maintenance are also provided. Cybergrafix, P.O. Box 430, Glendale, California 91206; (213) 243-5179.

Hardware

8K PROM Programmer

Circle number 11 on Fast Feedback card

The new PROROM board is S-100 compatible EPROM board with on-board programmer. The board has provisions for 7.5 Kilobytes of Prom and 512 bytes of RAM. The prom used is the ultra-violet

eraseable AMI-S-6834, which is a low cost 512 byte EPROM. It does not require any special software and can program from one byte, to all 7.5. The on board RAM provides memory for the often needed stack or other scratch pad area. The unit comes with 256 words of RAM and one prom, which is preprogrammed with an 8080 system monitor.

All components and sockets are included, along with a complete documentation package for $164.00. Mountain Hardware, Box 1133, Ben Lomond, CA 95005; (408) 336-2495.

Versatile Video Display

Circle number 12 on Fast Feedback card

Cybercom, a division of Solid State Music, has a new S-100 video display board, the VB1. The cursor, video reverse, and graphics are software controlled with no internal hardware adjustments necessary for various operational changes.

Other features of the VB1 include onboard dip switch selection of 32 or 64 characters per line, with 16 display lines; upper and lower case and Greek alphabet with other interchangeable fonts readily available; 2 x 3 matrix graphics; parallel and composite video outputs to video monitor or TV set; and, the VB1 can be addressed for any 1K block of memory.

Kit $189.95, assembled $269.95. Cybercom, 2102A Walsh Avenue, Santa Clara, CA 95050; (408) 246-2707.

Kimsi Interface/Motherboard

Circle number 13 on Fast Feedback card

Forethought Products announces Kimsi, the bridge between low cost Altair/IMSAI type boards and the KIM.

The Kimsi board connects to any unmodified KIM-1 computer and converts all its signals to the S-100 (Altair/Imsai) bus format. On a single board Kimsi contains both the interface logic and a fully buffered motherboard with eight 100 pin slots.

Kimsi makes Altair/Imsai type boards *plug-in compatible* with KIM, but doesn't alter the operation of KIM in any way. All instructions are executed in the normal manner, at full speed. There are no extra instructions or software modifications needed.

The price of a kit with one 100 pin connector is $125 or $150 assembled. A power supply is $60 in kit or $75 assembled. Forethought Products, P.O. Box 386-A, Coburg, Oregon 97401.

Need the Time?

Circle number 19 on Fast Feedback card

COMPTEK's CL2400 is a unique S-100 bus real time clock that keeps the present time of day in hours, minutes, and seconds.The CL2400 continually updates the time, using the 60 Hz AC power line frequency as a reference. It is treated as a peripheral by the CPU, and also can generate interrupts.

Kit $98, assembled $135. Comptek, Box 516, La Canada, CA 91011.

State-of-the-Art Microcomputer. $245.

6502 MPU Array.
8 bit MPU, 13 addressing modes, multiple interrupts, 65K address range

6530 Arrays
2048 ROM Bytes
128 RAM Bytes
30 I/O Pins
2 Timers

1024 Byte RAM

Interface & Control
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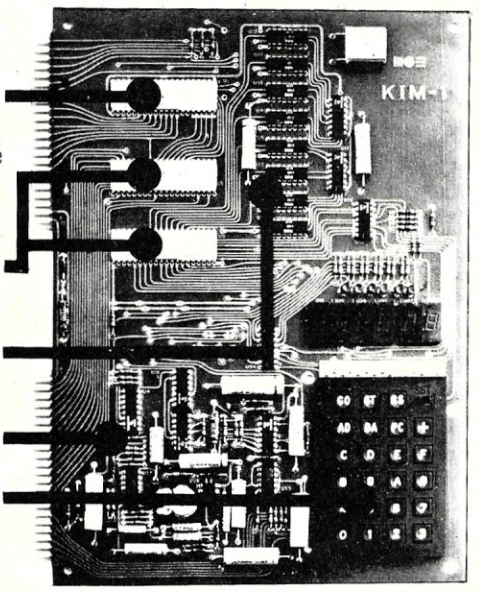

THE KIM-1

Low price includes KIM-1 Module, monitor programs stored in 2048 ROM Bytes, User Manual, wall size Schematic, Hardware Manual, Programming Manual, Programmers Reference Card.

And you don't have to assemble it!

Now, for less than the cost of a kit, you can own a fully assembled, tested and warranted KIM-1 microcomputer system. Just connect your power supply and it's operational.

KIM-1 is the result of state-of-the-art technology. A complete, superbly engineered microcomputer on a single printed circuit module. Yet it is a system you can grow with. You can add an audio cassette unit to provide permanent bulk storage for programs, data. You can add a TTY (or equivalent) by just connecting 4 wires. And if you need more memory or I/O, everything necessary for expansion is built-in.

It's everything you could ask for in a personal microcomputer. And for less than the cost of a kit!

Dealer inquiries invited.

ORDER YOUR KIM-1 NOW!

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Culver City, CA 90230
(213) 391-6294

Please ship me_____KIM-1 Systems complete with hardware, software and documentation for $245.00 per system plus $4.50 shipping, handling and insurance. California residents add 6% sales tax.

Enclosed is my check or money order for $_____.

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Address_____

City_____

State_____ Zip_____

Circle No. 75 on Inquiry Card

Another Floppy Controller

Circle number 26 on Fast Feedback card

The CHP floppy disk controller board is designed for use with the S-100 bus and an 8080 or Z-80 type processor. The board can be modified to operate with most CPU's.

The board will control up to eight drives in a daisy chain arrangement where only one drive is selected at any given time.

It does not use DMA for data transfer, but uses the interrupt capability of the 8080 type processors for efficient software data transfer.

The standard model controls full size drives using soft sectored IBM 3740 type diskettes. Our mini-model will control the new mini-floppy drives. If you select one or the other model, and later decide you prefer the other type, we will send all necessary conversion parts and instructions for only $75.00!

Kit $300, assembled $375. Add $550 for a Remex 1000B drive. Computer Hobbyist Products, P.O. Box 18113, San Jose, Calif. 95158.

Another Floppy Controller

Circle number 27 on Fast Feedback card

Peripheral Vision's new full-size floppy disk for the S-100 bus starts at $750 for the assembled and tested drive plus interface card kit. The interface card supports up to eight drives and stores over 300,000 bytes per floppy. Software includes a DOS, disk utilities and a peripheral interface program.

Peripheral Vision, Box 6267, Denver, CO 80206; (303) 777-4292.

A Printer

Circle number 29 on Fast Feedback card

A full-size impact printer, designed for use with microcomputers, is being offered by the digital Group, Denver, Colorado-based designer and manufacturer of microprocessor systems and peripherals. It prints 120 charactes per second with 96 characters per line.

Kit prices start at $495 for the printer and parallel interface card. The digital Group, P.O. Box 6528, Denver, Colorado 80206; (303) 777-7133.

AC Power Control System

Circle number 18 on Fast Feedback card

COMPTEK has recently introduced its PC3200 Power Control System for S-100 bus microcomputers. The system components combine to form a high quality AC power switching system that enables microcomputer control of lights, small motors, appliances, tools, etc.

Presently available are the PC3216, a 16 channel Control Logic Interface ($189 kit, $240 assembled), and the PC3202, a 400 watt 120 VAC Power Control Unit ($39.50 kit, $52 assembled). Computer, Box 516, La Canada, CA 91011.

Peripheral Scientific Calculator

Circle number 24 on Fast Feedback card

The Microcalculator Model 85 is an advanced scientific calculator for operation with a microprocessor. The keyboard of the scientific calculator has been replaced by control and interface circuitry which permit a microprocessor to enter instructions and read back answers. The answer, as with a standard scientific calculator, is displayed on a fourteen (14) digit LED display, and at the same time may be read back into the microprocessor for terminal display. Connection to the microprocessor is via the microprocessor's 8 bit I/O port. Cable and connector to interface the Microcalculator with the microprocessor is supplied.

$189.50. Artisan Electronics Corporation, 5 Eastmans Road, Parsippany, N.J. 07054

The Rest

Dear Abby

Circle number 30 on Fast Feedback card

John Fusek is offering mail order consulting.

Answers to specific questions are $5.00 for the first and $2.00 thereafter. Systems configuration advise is $7.50 and up. Definitions of terms are $2.00 for the first and $1.50 thereafter and an estimate on a software design will cost you $2.00.

John is basically a hobbyist trying to pay for his system and will entertain offers of trades, etc.

An unusual service. Contact John at Box 3095, Newport News, VA 23607.

Backplane Test Board and Reference Card

Circle number 31 on Fast Feedback card

The ALF Products 5-1-6 test Board is used to check for solder bridges in S-100 mother boards. When inserted in the 100 conductor socket, the board connects pins 2 through 50 together and pins 51 through 99 together (pins 1 and 100 have no connection, but are connected to 51 and 50 by the buss). An ohm meter or similar low-voltage continuity tester is used to perform the test. They cost $3.50 each or $7.50 with solder plating and gold plated edge contacts.

ALF also publishes an 8080 reference card for 75¢.

ALF Products, 128 So. Taft, Lakewood, CO 80228; (303) 234-0871.

T-Shirts

Circle number 32 on Fast Feedback card

Martha Herman prints T-shirts with computer related phrases in MICR font letters ($5 each). She will also send a free shirt to the originator of any new phrase she prints. The message should be a computer related comment about the wearer.

Send your ideas to Martha Herman, 114 W. 17th St., New York, N.Y. 10011.

8080 Reference Card

Circle number 33 on Fast Feedback card

The Pragmatic Systems 8080 Instruction Timing Reference Card presents instruction execution times and characteristics of all 8080 instructions in a concise and easy to use format. The general timing equations for the 8080 are included along with pre-computed execution time columns for 8080 systems with a 2 MHz clock and memory access times from 0 to 1500 ns. The card is printed on heavy stock and punched for three-ring binders. It is ideal for use as a notebook reference.

$2.00 each or three for $5.00. (California residents should add 6.5% sales tax.) Pragmatic systems, P.O. Box 43, Mt. View, CA 94042.

8080 Sliderule

Circle number 34 on Fast Feedback card

The 8080 octal code card is a slide rule-like aid for programming and debugging 8080 software. It contains all the mnemonics and their corresponding octal codes. The instructions are all color coded to indicate which flags are affected during execution. The pocket sized card measures 6.5 by 3 inches.

The price is $2.95. Tychon, Inc., P.O. Box 242, Blacksburg, VA 24060, (703) 951-9030.

CSC Catalog

Circle number 35 on Fast Feedback card

Continental Specialties Corporation, manufacturers of breadboarding and test equipment for the professional and hobbyiest, announces the release of their new 1977 catalog.

This 16-page catalog features the complete line of Continental Specialties' QT Stockets, Proto-Clips, Proto-Boards, Logic Probes, Logic Monitors and Design Mates and introduces the new *experimentor* Sockets. Also featured are the new PC-40 Proto-Clips with or without cables.

Catalogs are available from: Continental Specialties Corporation, 44 Kendall Street, P.O. Box 1942, New Haven, CT 06509.

Paper Tape Splicers

Circle number 36 on Fast Feedback card

Master Digital Corporation has announced a new line of Tape Splicers and Patches for use with all 5 to 8 channel paper, mylar and aluminized tapes.

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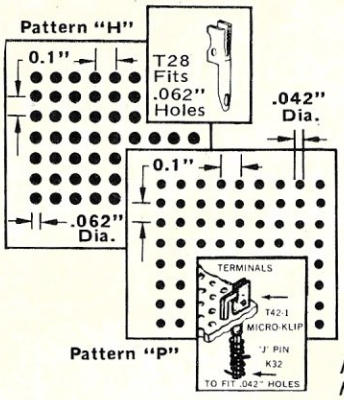

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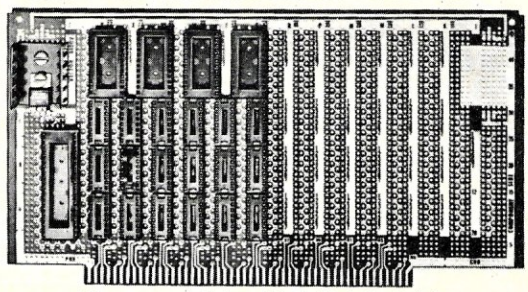

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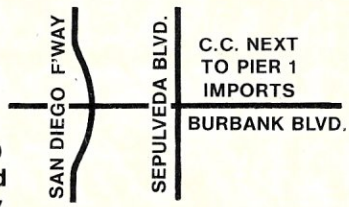

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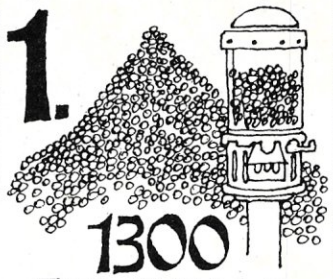

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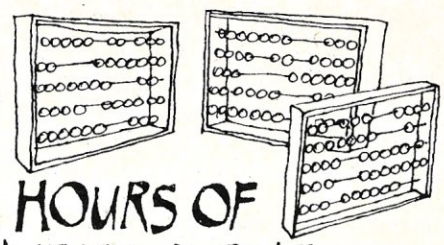

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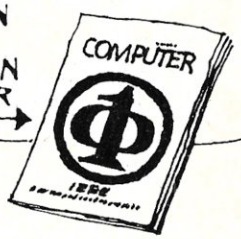

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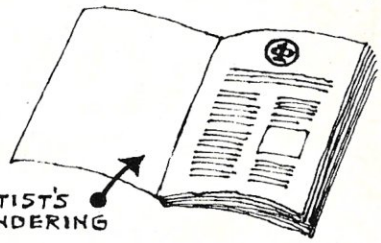

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Games and Things...

A Metric Tutor

By Phil Feldman and Tom Rugg, Associate Editors

Are you having trouble acclimating yourself to the metric system? Do you think a centimeter is a crawling bug with a hundred legs? Is a kilogram a hobbyist computing magazine you've been reading? If you answered yes to any of the above questions, the program we offer this month should be of interest. (If you answered no to all of them, you may still read on.)

Educational programs, like this metric tutor, are a good practical use of the home computer system (or any computer system for that matter.) The program presented here is designed to give the user "experience" with metric units of measurement. Through a series of questions, his familiarity with the metric system will be tested and hopefully improved.

How To Use It

The program is very simple to use. First, it requests that a random number be input. This is used, of course, to initialize the seed of the random number generator. Then it asks you how many questions would like to be asked.

A series of yes or no questions will now follow. They all compare a value in metric units with a value in our familiar English units. See the sample run for examples of the questions. To each question the user is expected to reply with yes or no. If he simply has no idea what the answer is, he may type help.

If yes or no is input, the program will indicate whether the response is right or wrong. If the answer is wrong, the exact comparison value is displayed along with the general rule governing that situation.

A reply of help is used when the user has no idea what the correct conversion is. He is then shown the appropriate rule.

After the requested number of questions have been asked, the program will indicate how many correct

```
RUN
PLEASE GIVE ME A RANDOM NUMBER? 27

HOW MANY METRIC QUESTIONS WOULD YOU LIKE? 5

IS 20  DEGREES FAHRENHEIT HOTTER THAN-4  DEGREES CENTIGRADE
? YES
  WRONG!

 20  DEGREES FAHRENHEIT EQUALS-6.66667  DEGREES CENTIGRADE

     THE RULE IS
  DEG.C = (DEG.F - 32)/1.8

IS 70  POUNDS HEAVIER THAN 24  KILOGRAMS
? NO
  WRONG!

 70  POUNDS EQUALS 31.7513  KILOGRAMS

     THE RULE IS
  1 POUND EQUALS .45359  KILOGRAMS

IS 50  KILOGRAMS HEAVIER THAN 128  POUNDS
? NO
  RIGHT!

IS 13  INCHES LONGER THAN 21  CENTIMETERS
? YES
  RIGHT!

IS 71  GALLONS MORE THAN 178  LITRES
? HELP

 71  GALLONS EQUALS 268.758  LITRES

     THE RULE IS
  1 GALLON EQUALS 3.78533  LITRES

  YOU GOT 2  RIGHT OUT OF 5  QUESTIONS

HOW MANY METRIC QUESTIONS WOULD YOU LIKE? 0
BYE
BREAK IN 310
OK
```

Figure 1. Sample Run

answers were given. It will then ask how many more questions are desired. A reply of "0" will terminate execution.

Philosophy

The questions cover several units of measurement in five general areas: length, speed, weight, volume, and temperature. The selections are random. The question may be arranged with either the English value first or the metric value first.

The second value in the question will usually be within 50% of the exact converted value. Thus, the two values compared in the question are kept reasonably close. This means simple familiarity with the rough ratios produced by the questions will tend to get the user thinking about good approximations. Even if he misses the questions, he has just been mentally comparing two converted values which are in the same ball park. Three cheers for osmosis!

When the user misses a question, the information displayed is designed to let him understand what caused the mistake and how far off he was.

```
50  REM METRIC QUESTIONING PROGRAM
75  REM BY PHIL FELDMAN AND TOM RUGG - MARCH 1977
100 DIM W$(14),U$(14),R$(7),C(14)
110 FOR I=1 TO 14:READ W$(I):NEXT
120 FOR I=1 TO 3:READ U$(I):NEXT
130 FOR I=8 TO 10:READ U$(I):NEXT
140 FOR I=1 TO 7:READ R$(I):NEXT
150 FOR I=1 TO 7:READ C(I):NEXT
160 DATA DEGREE FAHRENHEIT,MILE PER HOUR,FOOT
170 DATA MILE,INCH,GALLON,POUND
180 DATA DEGREE CENTIGRADE,KILOMETER PER HOUR,METER
190 DATA KILOMETER,CENTIMETER,LITRE,KILOGRAM
200 DATA DEGREES FAHRENHEIT,MILES PER HOUR,FEET
210 DATA DEGREES CENTIGRADE,KILOMETERS PER HOUR,METERS
220 DATA HOTTER,FASTER,LONGER,LONGER,LONGER,MORE,HEAVIER
230 DATA 0.5,1.60935,0.3048,1.60935,2.54,3.78533,0.45359
240 FOR I=4 TO 7:U$(I)=W$(I)+"S":NEXT
250 FOR I=11 TO 14:U$(I)=W$(I)+"S":NEXT
260 FOR I=8 TO 14:C(I)=1/C(I-7):NEXT
270 U$(5)="INCHES":Y$="Y":N$="N":B$=" "
280 INPUT"PLEASE GIVE ME A RANDOM NUMBER";N
290 N=-ABS(N):N=RND(N):PRINT
300 INPUT"HOW MANY METRIC QUESTIONS WOULD YOU LIKE";N
310 IF N<1 THEN PRINT"BYE":STOP
320 S=0:FOR Q=1 TO N:A=INT(RND(1)*13.9999)+1:B=A+7:L=A
330 IF B>14 THEN L=A-7:B=A-7
340 V1=INT(RND(1)*99)+2:V3=V1*C(A)
350 IF A=1 THEN V3=(V1-32)/1.8
360 IF A=8 THEN V3=(V1*1.8)+32
370 V2=V3*(.5+RND(1)):V2=INT(V2+.5):T=0:IF V2<V3 THEN T=1
380 PRINT
390 PRINT"IS";V1;B$;U$(A);B$;R$(L);" THAN";V2;B$;U$(B)
400 INPUT A$:A$=LEFT$(A$,1):R=2:IF A$=N$ THEN R=0
410 IF A$=Y$ THEN R=1
420 W=T-R:IF W=0 THEN S=S+1:PRINT"  RIGHT!":GOTO 450
430 IF R=2 THEN GOSUB 480: GOTO 450
440 PRINT"  WRONG!":GOSUB 480
450 NEXT Q:PRINT
460 PRINT"  YOU GOT";S;" RIGHT OUT OF";N;" QUESTIONS"
470 PRINT: GOTO 300
480 PRINT
490 PRINT V1;B$;U$(A);" EQUALS";V3;B$;U$(B)
500 PRINT:PRINT"      THE RULE IS"
510 IF A=1 THEN PRINT"  DEG.C = (DEG.F - 32)/1.8":RETURN
520 IF A=8 THEN PRINT"  DEG.F = (DEG.C * 1.8) + 32":RETURN
530 PRINT"  1 ";W$(A);" EQUALS";C(A);B$;U$(B):RETURN
OK
```

Figure 2. The Program

How it Works

The program was written in MITS BASIC. String variables and string arrays are used freely. The function LEFT$(A$,1) in line 400 returns a string equal to the first character of the string A$.

Random numbers between 0 and 1 are returned by the function RND. The seed is set in line 290 by the user reply to the question asked in line 280.

The statements before 280 serve to set the strings and constants used in the program.

We won't got into all the gory details of exactly how the questions are generated. Each one is set up in lines 320-370 and asked in line 390. V1 is the value on the left hand side of the question and V2 is the value on the right. V3 contains the true conversion of V1 into the units of V2.

In lines 400-450 the user's response is analyzed and the appropriate action taken. The subroutine from 480-530 prints the true converted value (V3) and the governing general rule.

Using It On Your System

Our program was run with MITS Disk Extended 4.0 BASIC. It required a little less than 2K of memory beyond that required for Basic. the program probably could be made to fit on an 8K system using 8K BASIC. The trig functions are not needed and a few pinches here and there in the code might do the trick. It will fit into 9K easily.

Well that's it. Try it out and see how you do. And remember, if you find any bugs in the program, they're probably only centimeters.

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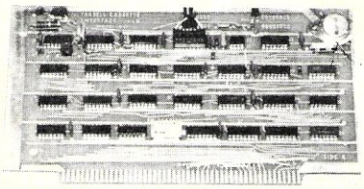

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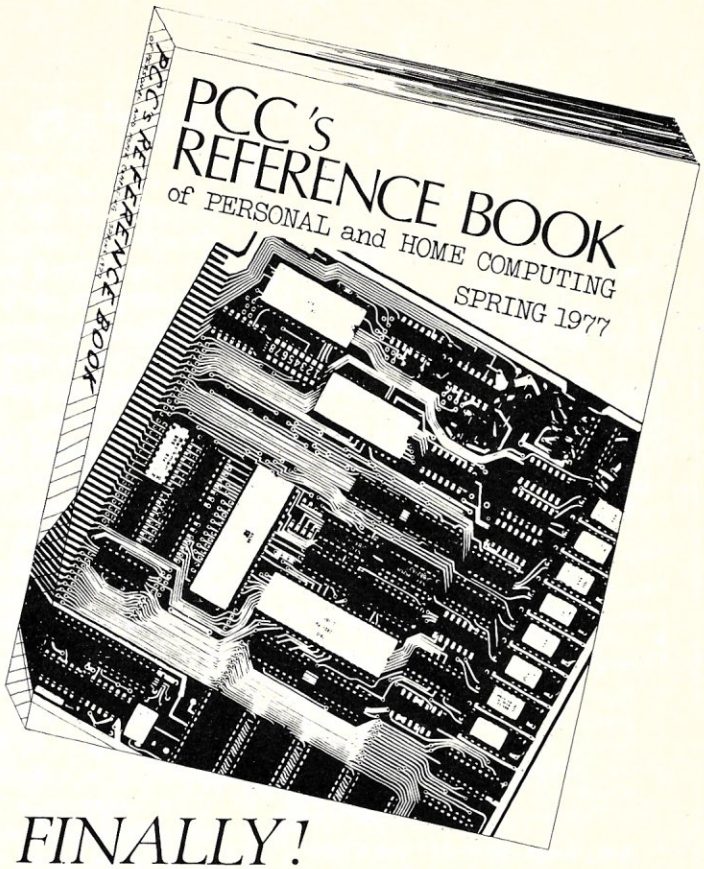

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Reprints

In the last issue, we kicked off a reprinting system, which continues this month. The idea is to get specialized information flowing between people without tying up magazine pages.

The major source of reprints will probably be newsletter articles; however, anything which can be Xeroxed (litings, drawings, poems, etc.) is welcome.

For the system to work, many people must try to generate and turn up material to disseminate. Send us a good copy of the material, get the author's permission if it is in doubt, and type up a short abstract indicating what it is about and who would be interested in it. Remember, this is your magazine.

To request a reprint send a self-addressed, stamped envelope plus a copying fee of 10¢ per page* (send stamps, coins, whatever). If an author wants a "royalty", he should let us know and we'll add that to the cost of the reprint for him.

8080 Programming Tips and Tricks

An excellent collection of assembly language tricks from Bob Wallace of the Northwest Computer Club. Some of them are based on another excellent article in the August 1976 issue of *Computer Design* and some were borrowed from the *Homebrew Computer Club Newsletter*. SASE + 20¢.

Converting TV Set to Monitors

Two articles from the *Homebrew Computer Club Newsletter* on modifying your TV set for use as a monitor. Send a SASE and 20¢ for these and also check Chapter 8 of Don Lancaster's *TVT Cookbook*, if you're interested in the subject.

SCCS Designed Transformer Documentation

This paper, by Rudy Hirschmann, *thoroughly* describes the SCCS' Altair replacement transformer (*Interface*, January 1977, P. 15). It is of interest even if you are not going to buy one of the transformers. SASE + 40¢.

The Game *Mastermind*

Have you seen the game of *Mastermind*? It's a slick, logical guessing game in which both the positions and values of a string of digits are to be determined given limited information. S. P. Schumacher of the Pittsburgh Area Computer Club wrote it up in their newsletter. Send a SASE + 30¢ for a BASIC listing, sample run and short commentary.

Digital Principles

Are you a beginner at digital electronics? Dea Froggatt wrote an article on digital principles in the *Denver Amateur Computer Society Newsletter*. Dea covers basic gates and truth tables. Many examples are presented and some discussion of actual TTL chips. Send an SASE + 40¢.

Community Memory in San Francisco

A description of the first community information systems experiment. SASE and 40¢.

Community Memory on Wheels

A description of Lee Felsenstein's latest community information systems project. A disc based micro that moves from community to community in a van. SASE + 30¢.

Note that both of the above are available in back issues of Lee's newsletter, the Journal of Community Communication. *Write him at 1807 Delaware St., Berkeley, CA. 94703 (don't forget to enclose a SASE).*

Games for Schools

Sample runs of the games discussed in Joanne Verplank's article on page 13. SASE + 30¢.

Compute Faire Vendors

A list of the names and addresses of the vendors mentioned on page 19. SASE + 10¢.

*We figure 5¢ for Xeroxing and 5¢ to get someone to do it. We're not interested in profit, so they may change, depending upon our experience.

Aircraft Flight Plan Program
By Bob Ripley

This BASIC program should save anyone planning a flight 20 to 30 minutes. Because of the extensive use of prompting, even the uninitiated should be able to run the program. Another advantage of using this program over the older slower methods is that the effects of alternate routes, headings, altitudes, etc. are more easily determined. The possibility of making a mistake is also significantly reduced.

There are no multiple statements, but SIN, COS and ATN functions are required. Have a happy flight!

```
RUN
PLANNING A FLIGHT CAN BE FUN!
I WILL DO IT FOR YOU, IF YOU JUST ANSWER MY QUESTIONS.
PRESS THE RETURN OR CR KEY AFTER EACH RESPONSE
WE WILL DO A LEG AT A TIME, PAUSING SO THAT YOU CAN
FILL IN THE FLIGHT PLAN FORM AS WE GO
IF YOU NOTICE THAT YOU MADE A MISTAKE AFTER THE CR
PRESS CR AGAIN AND TYPE RUN TO START OVER
HOW MANY GALLONS OF USABLE FUEL? 38
WHAT IS THE FUEL RATE IN GPH? 7
WHAT IS THE TRUE AIR SPEED IN KNOTS? 110
THE WIND IS FROM WHAT (TRUE) DIRECTION (DEGREES)? 310
WHAT IS THE WIND SPEED IN KNOTS? 10
WHAT IS THE MAGNETIC VARIATION (EAST=+,WEST=-DEGREES)? -15
WHAT IS THE COURSE FOR THIS LEG (DEGREES)? 48
HOW LONG IS THIS LEG IN NM? 137

HEADING IS 50.7 DEGREES
GROUND SPEED IS 108.7 KNOTS
THE TIME FOR THIS LEG IS 75.6 MINUTES
TOTAL TIME IS 1 HOURS AND 15.6 MINUTES
FUEL USED ON THIS LEG IS 8.8 GALLONS
TOTAL FUEL USED IS 8.8 GALLONS; LEAVING 29.2 GALLONS

ANY SPEED, WIND, OR VAR CHANGES THIS LEG? NO
WHAT IS THE COURSE FOR THIS LEG (DEGREES)? 132
HOW LONG IS THIS LEG IN NM? 264

HEADING IS 135.2 DEGREES
GROUND SPEED IS 118.7 KNOTS
THE TIME FOR THIS LEG IS 133.4 MINUTES
TOTAL TIME IS 3 HOURS AND 29 MINUTES
FUEL USED ON THIS LEG IS 15.6 GALLONS
TOTAL FUEL USED IS 24.4 GALLONS; LEAVING 13.6 GALLONS

ANY SPEED, WIND, OR VAR CHANGES THIS LEG? YES
WHAT IS THE FUEL RATE IN GPH? 7
WHAT IS THE TRUE AIR SPEED IN KNOTS? 105
THE WIND IS FROM WHAT (TRUE) DIRECTION (DEGREES)? 320
WHAT IS THE WIND SPEED IN KNOTS? 12
WHAT IS THE MAGNETIC VARIATION (EAST=+,WEST=-DEGREES)? -12
WHAT IS THE COURSE FOR THIS LEG (DEGREES)? 277
HOW LONG IS THIS LEG IN NM? 275

HEADING IS 270.4 DEGREES
GROUND SPEED IS 97.4 KNOTS
THE TIME FOR THIS LEG IS 169.4 MINUTES
TOTAL TIME IS 6 HOURS AND 18.4 MINUTES
FUEL USED ON THIS LEG IS 19.8 GALLONS
TOTAL FUEL USED IS 44.2 GALLONS; LEAVING-6.2 GALLONS
RUNNING OUT OF FUEL IN FLIGHT
CAN BE HAZARDUS TO YOUR HEALTH
PRESS CR AGAIN AND TYPE RUN TO START OVER
HOW MANY GALLONS OF USABLE FUEL?
```

```
5 REM AIRCFAFT FLIGHT PLAN BY BOB RIPLEY 1-22-77
10 PRINT"PLANNING A FLIGHT CAN BE FUN!"
15 PRINT"I WILL DO IT FOR YOU, IF YOU JUST ANSWER MY QUESTIONS."
20 PRINT"PRESS THE RETURN OR CR KEY AFTER EACH RESPONSE"
25 PRINT"WE WILL DO A LEG AT A TIME, PAUSING SO THAT YOU CAN"
30 PRINT"FILL IN THE FLIGHT PLAN FORM AS WE GO"
35 PRINT"IF YOU NOTICE THAT YOU MADE A MISTAKE AFTER THE CR"
37 PRINT"PRESS CR AGAIN AND TYPE RUN TO START OVER"
40 INPUT "HOW MANY GALLONS OF USABLE FUEL";F1
50 INPUT "WHAT IS THE FUEL RATE IN GPH";F
60 INPUT"WHAT IS THE TRUE AIR SPEED IN KNOTS";T
70 INPUT "THE WIND IS FROM WHAT (TRUE) DIRECTION (DEGREES)";D
80 INPUT "WHAT IS THE WIND SPEED IN KNOTS";S
90 INPUT "WHAT IS THE MAGNETIC VARIATION (EAST=+,WEST=-DEGREES)";V
100 INPUT "WHAT IS THE COURSE FOR THIS LEG (DEGREES)";C
110 INPUT "HOW LONG IS THIS LEG IN NM";M
111 R=57.2958
112 D=D-V
120 A=SIN(D-C)
122 IF S=0 THEN B=0
124 IF S=0 GOTO 135
130 B=S/T
135 B1=ATN(B/SQR(-B*B+1))
140 H=C+(B1*R*A)
145 IF H<0 THEN 160
147 PRINT
148 H=INT(H*10+.5)/10
150 PRINT"HEADING IS"H"DEGREES"
155 GOTO 170
160 H=H+360
165 GOTO 147
170 G=T*COS((H-C)/R)-S*COS((D-C)/R)
175 G=INT(G*10+.5)/10
180 PRINT"GROUND SPEED IS"G"KNOTS"
182 IF G>0 GOTO 185
184 PRINT"YOU CAN NOT GET THERE THIS WAY"
185 T1=60*M/G
187 T1=INT(T1*10+.5)/10
190 PRINT"THE TIME FOR THIS LEG IS"T1"MINUTES"
200 T2=T2+T1
210 IF T2<60 THEN PRINT"TOTAL TIME IS"T2"MINUTES"
215 IF T2<60 THEN GOTO 250
220 T3=INT(T2/60)
230 T4=T2-T3*60
240 PRINT"TOTAL TIME IS"T3"HOURS AND"T4"MINUTES"
250 F2=F*(T1/60)
255 F2=INT(F2*10+.5)/10
260 PRINT"FUEL USED ON THIS LEG IS"F2"GALLONS"
270 F1=F1-F2
280 F3=F3+F2
290 PRINT"TOTAL FUEL USED IS"F3"GALLONS; LEAVING"F1"GALLONS"
292 IF F1<=0 THEN 320
300 PRINT
302 INPUT "ANY SPEED, WIND, OR VAR CHANGES THIS LEG";C$
304 IF C$="YES" THEN GOTO 50
310 GOTO 100
315 PRINT
320 PRINT"RUNNING OUT OF FUEL IN FLIGHT "
330 PRINT"CAN BE HAZARDUS TO YOUR HEALTH"
340 GOTO 37
350 END
OK
```

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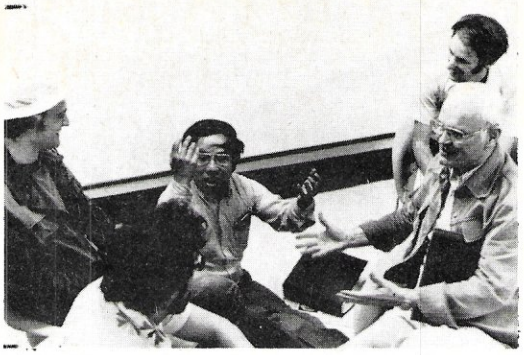
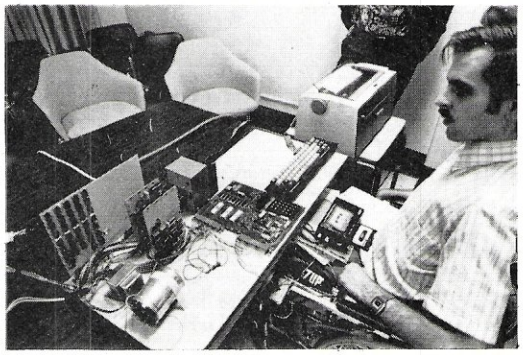
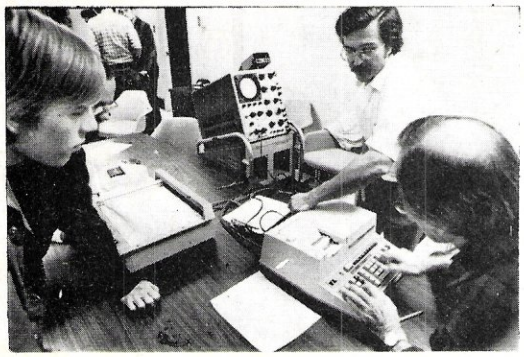
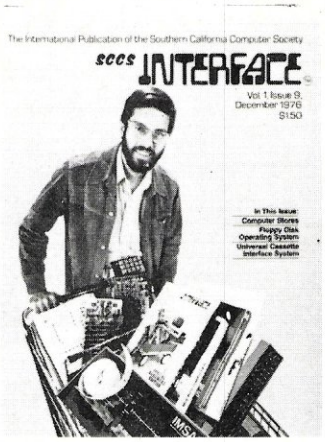
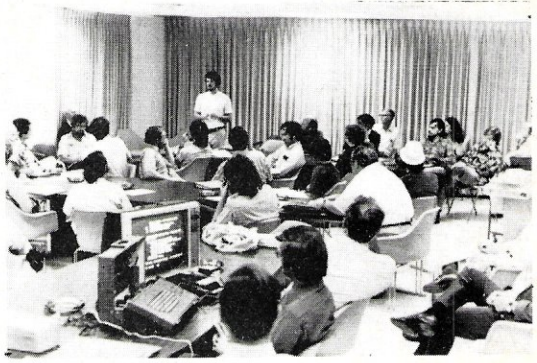


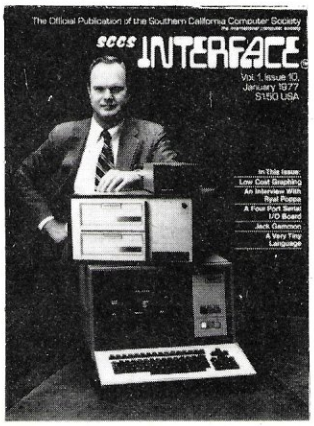


An informal, international organization of computer buffs, the Southern California Computer Society (SCCS) was founded in 1975. Today its roster boasts more than 8000 members. This explosive growth stems in part from the benefits that members enjoy because of SCCS's busy, well planned agenda of activities and services. Here are some of the functions which the society offers or plans to help computer professionals and nonprofessionals alike: Conducting meetings, seminars, and lectures... Publishing books, newsletters, and a monthly magazine... Providing informal technical assistance... Arranging classes... Developing and maintaining workshops... Providing scholarships for classes and memberships... Rendering an ombudsman service... Arranging group purchasing agreements... Performing job placement services... Supplying video presentations for society and chapter meetings... Helping local chapters organize meetings and recruit members... Coordinating relationships with other technical societies and specialty groups.









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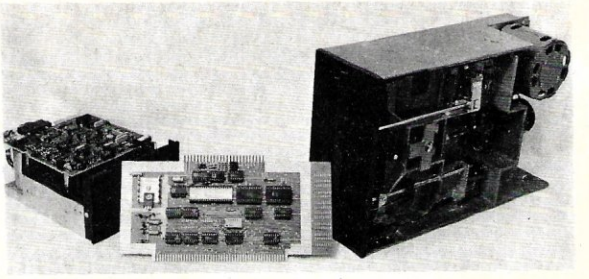

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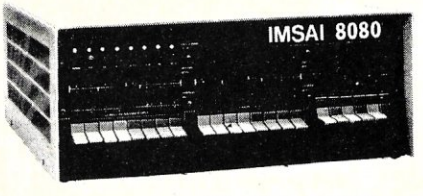

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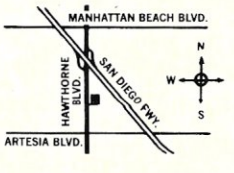

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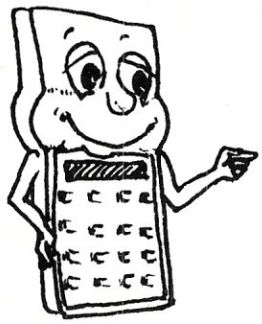

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FOR SALE: Factory-assembled 6800 microcomputer: CPU board with 1K EPROM (monitor, debug, assembler, editor), 4K RAM, ½ PIA; 16K RAM Memory board; Video interface board; I/O Serial board with audio KC standard and EPROM (load&dump); 9" TV Monitor; cassette recorder; PC wiring for TTY/RS232/modem; Manuals, schematics, documentation; software on cassettes includes Tiny Basic, mneumonic assembler, games, & more. Price: $1800! Contact David Demorest, 12697 Graton Rd., Sebastopol, Ca., 95472; (707) 823-1698.

FOR SALE: ACT 4004/4040 complete computer on board with clock, CPU, and sockets for 16 1702 UV PROM and 16 RAM chips. Complete with documentation. $120. Bill Fuji 1506 Sandcastle Dr. Corona del Mar, CA 92625.

CORE MODULES: 256 (16 x 16) x 4 bits. Use for bootstrap routines, etc. Originally used in Wang Calculators. With schematics, $5 each. Fully decoded in card, with edge connector. Pat Staken, 42F Ridge Rd., Greenbelt, MD 20770.

TTY PAPER TAPE: 1 inch wide, 8 inch diameter roll, buff, oiled. Perfect for ASR-33. $5.00 + UPS shipping per 7 roll carton (12 lbs.) or $15.00 per 28 roll case + UPS. Two or more cases, $12.50 each + UPS. Dan S. Parker, 1007 3rd St. #3, Davis, CA 95616 (916) 758-2341 evenings.

FOR SALE: One MITS 4K static memory board and one MITS 4K dynamic memory board, $165 each. One Proc Tech 8K memory board $315. All boards fully socketed, fully assembled, and work perfectly. J. R. Fish, 2121 Columbia Pike #208, Arlington, VA 22204. (703) 521-6763.

INFO NEEDED: I would like to know how to interface a calculator chip to a SC/MP (not everyone can afford an ALTAIR.) Bill Vonwicklen, 1541 Ave Q-6, Palmdale, CA 93550.

FOR SALE: Altair circuit boards bare. Front panel card, CPU card (both unused) and 4 slot motherboard with connectors (used). Take all for $68. Write R. A. Gaspari, 6656 W. 87th Pl., L.A. 90045.

MICROCOMPUTER HELP AVAILABLE: Am presently a student but have many years of hardware and software experience and am available part time. Work with small business, control systems, home, personal and hobby applications. Systems analysis, BASIC and machine language programming, and will build equipment for ½ difference between kit and assembled prices. Also available for teaching assignments. Martin Edwards, Box 6244 Torrance 90504, (213) 874-2200. If you are within 200 miles of L.A., I can reach you by small plane.

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MICRODATA REALITY: Are there any other computer hobbyists using this system? If so, I'd like to say hello, swap notes and programs, etc. Would also like to know where to buy a 4- or 8-way video terminal interface card and other peripherals for Microdata Reality (Model 1600 cpu). Jack Hardman, 140 Forest Ave., Glen Ridge, N. J. 07028. (201) 429-8880.

NATIONAL IMP 8C/200 MICROPROCESSOR: 8½ by 11 card, factory sealed carton with applications, programming and assembly manuals. Fully assembled with 2 I/O ports and 256 bytes RAM $180. Pat Staken, 42F Ridge Rd., Greenbelt, MD 20770.

FOR SALE: Basic Four System model 350. Toni Allen or David Palmer, 3855 Pacific Coast Highway, Torrance, CA 90506, (213) 378-0303.

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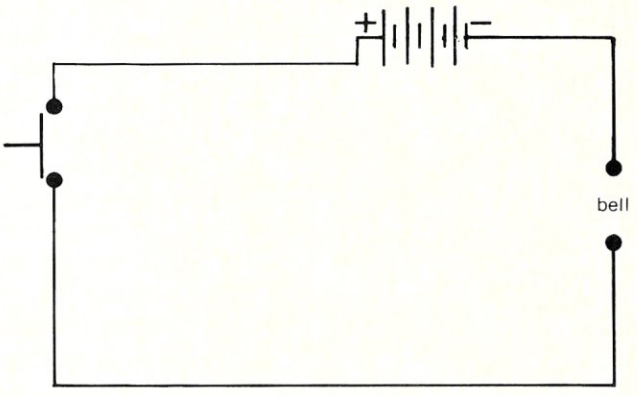

Answer to problem on page 23.

Science Fiction Corner

By Lew Whittaker

The field of science fiction writing, like computer engineering, is one of the last bastions of undaunted male chauvinism, right?—Wrong, on both counts!! Women today are heavily involved in every aspect of computer design, engineering, application and operations. Women are just as deeply involved in all aspects of science fiction writing and editing. In fact, probably the first novel that can be truly classified as a science fiction work was written by a woman. You may have heard of it—*FRANKENSTEIN,* by Mary Shelley, written in 1819. Mary Shelley was an unusual person for any age, much less the early part of the 19th century. Not wanting to live in the shadow of her poet husband, Percy, she wrote *FRANKENSTEIN* to win a bet and to show that a woman could be more than just another appendage to a man.

It is true that in the years since Mary Shelley, the quality and quantity of women writers in the field of science fiction was meagre, to say the least. The art of science fiction became a medium controlled almost entirely by men and geared to an audience of men and boys.

In the collective years before World War II, I think it fair to say that female characters were scarcely a major factor in science fiction—This was true whether the author was a chauvinistic male or female writing in the established mold of macho science fiction. Even if a woman were portrayed in a story, it was rarely a fair or realistic portrayal. The woman was a "fair prize" to be won by the interstellar swashbuckler, or she was an addlebrained or bumbling housewife, stumbling through the story on the heels of her more competent husband.

The post World War II era brought about a spark of change in the style of fantasy writing as it related to women. Writers, both men and women, slowly began to treat women as if they were real people instead of caricatures.

Judith Merrill is a notable example of a better science fiction writer who had a major impact on the field. She wrote a number of good novels and short stories in the 40's and 50's and went on to edit annual collections of science fiction short stories. One of her better short stories dealing with a woman is "That only a Mother", 1948—a sad and touching portrayal of a woman's relationship with her child in the radioactive aftermath of a nuclear war.

Andre Norton wrote many good novels during the 1950's and 1960's. Perhaps because her writing was geared to a younger audience, she never received the acclaim that she could have. Ms. Norton used a very interesting technique in her writing. As protagonists in several of her novels, she used American Indians (The Sioux Spaceman, The Beast Master) as the lead characters.

Apparently, during the mid to late 1960's the doors opened wider and many more women writers entered the field, among them Anne McCaffrey, *Dragonflight,* Kate Wilhelm, "The Planners", Joanna Russ, *Picnic on Paradise,* and Marion Finner Bradley, *Sword of Aldones.*

One of my favorite authors (of whatever sex) is Ursula K. Le Guin. A prolific writer of both short stories and novels, she is apparently the favorite of many others besides myself, for she has won two Hugo awards, the Nebula award and the Boston Globe-Horn Book award, among many literary tributes.

Where it used to be a rather unusual sight to see a feminine byline on a science fiction article or story, now the sight is increasingly common.

When both computer design and science fiction writing become integrated with females as talented as their male compatriots, what sanctuaries are left for us die-hard male chauvinists? We might soon have to give up the struggle and accept the realities of the world—our sisters have arrived!

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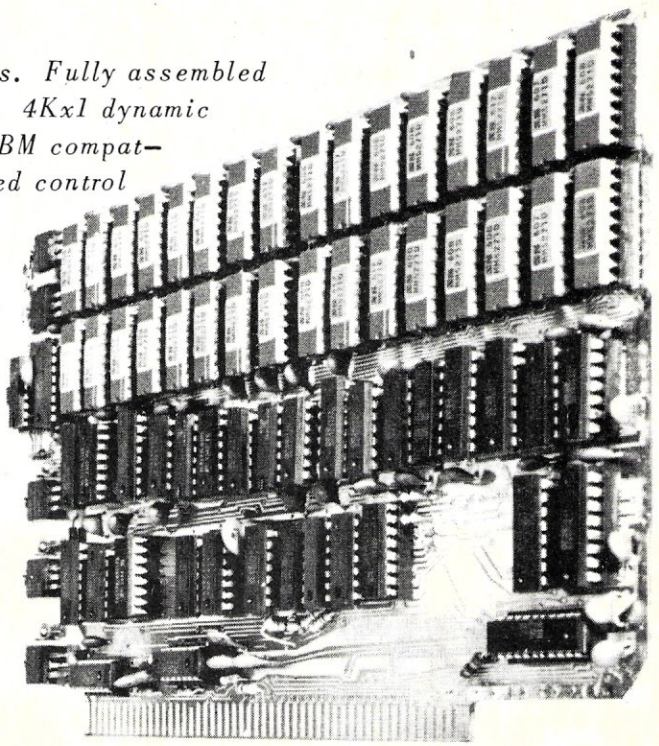

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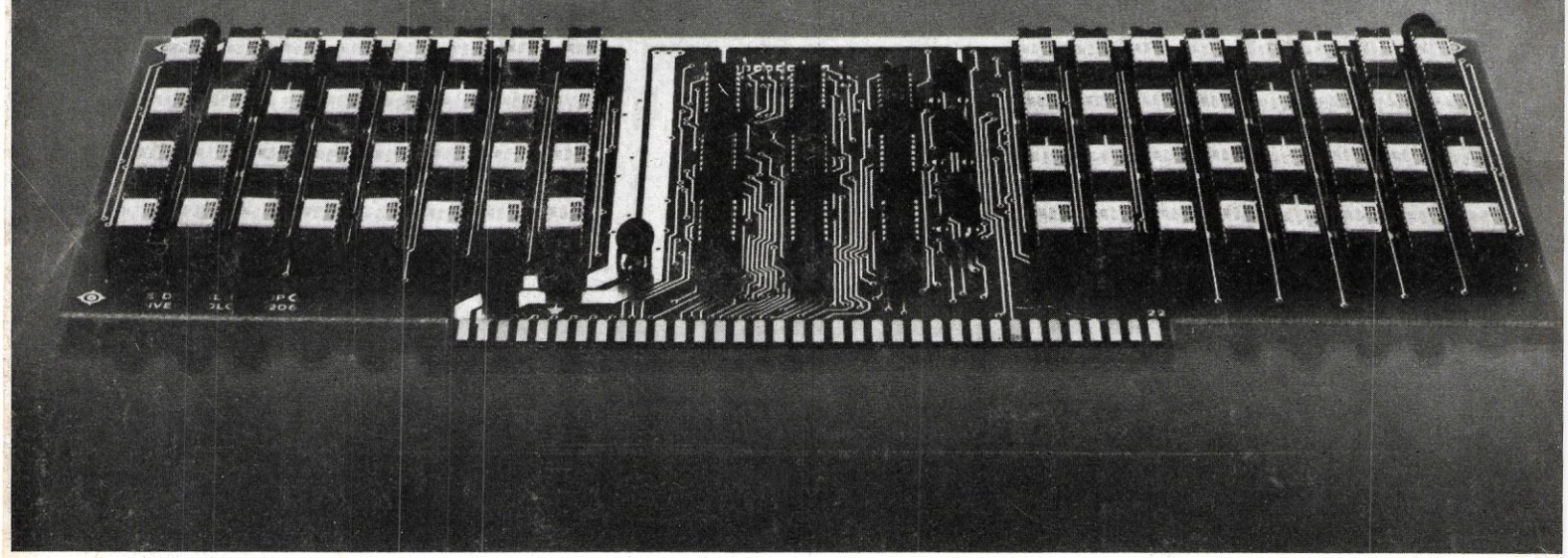

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